

**JOURNAL**  
*of the*  
**American Veterinary Medical  
 Association**

FORMERLY

**AMERICAN VETERINARY REVIEW**

(Original Official Organ U. S. Vet. Med. Assn.)

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The American Veterinary Medical Association

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**February, 1925**

**No. 5**

**WHO PAYS THE BILL?**

On the automobile page of the Sunday edition of a large metropolitan newspaper recently appeared an article carrying a three-column head as follows:

**ONE HORSE FOR EVERY AUTO;  
DOBBIN SLOWLY GIVING WAY.**

This article was along the usual line and among other statements was the following:

"Competent authorities claim that the farmer is just beginning to realize the value of the motor car. Manufacturers are fixing plans for extensive selling campaigns in rural sections next year."

On the same page, but in a very inconspicuous location, was a five-line filler bearing the caption, "A Costly Dump Heap." This read as follows:

"Out of the 4,000,000 automobiles built each year in the United States, cars to the value of the appalling sum of \$2,000,000,000 are junked each year."

The value of the automobiles sent to the junk pile, each year, is slightly in excess of the value of the entire horse population in the United States, as shown by the 1920 census, and is almost fourteen times as much as the annual loss among horses and mules, due to disease.

We dislike to think of an animal disease loss running into billions annually.

### A FEW HIGH SPOTS

The Corn States Serum Company recently conducted a prize letter contest and awarded cash prizes to the first, second and third best answers to the question—

#### WHY SHOULD HOGS BE VACCINATED AGAINST HOG CHOLERA?

Mr. G. H. Williams, president of the Company, has kindly sent us copies of the winning letters for examination and comment. Many splendid arguments were brought out in these letters as answers to the above question, and we have selected from each letter what we believed to be the most impressive statement.

The salient features of the letter written by Andrew E. Larsen, Macksburg, Iowa, R. F. D. No. 1, is that he has a permit to vaccinate his own hogs, but prefers to employ a veterinarian. He evidently is a firm believer in the golden rule. He says:

"I hold a permit to vaccinate my own hogs but I always employ a veterinarian to do my vaccinating. . . . I keep my herd of pure-bred Hampshires vaccinated 'right up.' Most of my hogs are sold for breeding stock and I require cash or bankable paper from the buyers and in return I expect to supply them with 'bankable' hogs."

A good, working combination has been figured out by F. H. Hendon, herdsman at the Miller Brothers 101 Ranch, Marland, Oklahoma. He makes the following sensible observation:

"Vaccinated hogs have a greater market. This is especially true of pure-bred hogs. No conservative banker would consider unvaccinated hogs as security for a loan. . . . The poor results that occasionally follow vaccination can be overcome by using reliable serum and virus, administered by a graduate veterinarian, and by special care and feeding a few days before and after treating."

The vaccination of hogs has frequently been spoken of in terms of insurance. However, F. W. Culver, of Rose Hill, Kansas, rather cleverly analyzes the situation with the following contrast between the insurance agents on the one hand and serum companies and veterinarians on the other. Read his statement:

"I would plead with my fellow hog producers not to think that we are helping only the serum companies and veterinarians. Let us help them a little, whereby they can help us abundantly. Remember, if the insurance companies positively knew we would have a loss they would not send their agents to insure us. But if the serum companies and veterinarians knew we were going to have a loss by cholera, they would be right on the job. Which is better?"

We believe that contests of this kind are productive of much valuable publicity for the veterinarian. Such statements as those quoted, made by employers of veterinary services, when brought to the attention of farmers, breeders and stockmen, immediately start a train of thoughts which, in the majority of

cases, tend to melt away prejudices, if such exist, by presenting the "other side" of the case or by putting matters in a different light. The fullest value of such fine letters will not be obtained, however, unless the thoughts expressed in them are widely broadcast. Undoubtedly the managers of the contest will see to this.

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### TO DISCOURAGE CROPPING

A campaign is being launched, having for its object the elimination, from the dog shows of the country, of dogs with cropped ears and tails. The American Humane Association, through its general manager, Mr. Sidney H. Coleman, is taking a leading part in the movement. It is hoped to secure the support of all kennel clubs, as well as dog breeders and dog lovers in general.

Prominent members of the veterinary profession have been approached for the purpose of ascertaining the views of these men on the subject of cropping. These veterinarians, whose opinions have already been given considerable publicity, appear to be unqualifiedly opposed to the continuance of the custom, because the operation serves no good purpose and, as frequently carried out, is the cause of unnecessary suffering. Some veterinarians absolutely refuse to perform the operation. Others frequently do it only upon the very strong insistence of dog owners, who appear to be slaves to the dictates of fashion. Another reason why some veterinarians continue to perform this operation is because they know that if they do not do it, some layman will be asked to do it, one who has no scientific knowledge of the proper methods of anesthesia, not to say anything of surgery, and it becomes a choice of the lesser of two evils.

The chapter on humane methods, contained in the policy which was adopted by the Association, at Des Moines, leaves absolutely no doubt as to the position of the profession on this subject, although cropping was not mentioned specifically. The profession has never been in favor of needless and purely ornamental operations, even if these could be conducted absolutely without suffering to the patient, and it is believed that the movement to discourage and ultimately discontinue cropping will meet with the united support of veterinarians throughout the country.

### UDDER DISEASES OF DAIRY COWS

Under the above title recently appeared Farmers' Bulletin No. 1422, from the U. S. Department of Agriculture. Just what purpose this publication was intended to serve is not clear. In the introduction to the bulletin the following statement is made:

"The limitations of a bulletin of this kind preclude anything more than a brief discussion of each disease and a suggested line of simple treatment adopted to the means and condition of the average dairyman."

It would appear that the time is at hand for every dairyman to be his own cow doctor. The author acknowledges that a cow's udder is a complex affair and that a cow without an udder is just about as much good as no cow at all. To which we will agree, but beyond that point the unanimity of our opinions does not go very far.

Evidently the author of this literary gem was cramped for space, as he was obliged to get into less than thirteen pages all of the material dealing with some twenty-one diseases and conditions affecting the udder and the milk. This lack of space, too, was undoubtedly the reason that compelled him to dispose of the subject of the prevention of udder diseases in exactly fifteen lines, about one-third of a page.

A careful reading of the bulletin gives one the impression that the drug houses may have supplied most of the material dealing with treatment. By actual count there are 47 drugs or preparations prescribed in the bulletin. A list of these drugs would take up more space than the chapter on prevention. The author does not hesitate to tell the dairyman to use such drugs as strychnin, pilocarpin, digitalis and belladonna. If the dairyman is handy with a hypodermic syringe, so much the better.

Outside of confusing the average dairyman who attempts to employ the directions given in the bulletin, and outside of increasing the number of cases of udder troubles which veterinarians will be called upon to treat second-hand, and outside of providing some wholesome amusement for experienced practitioners who read the directions given dairymen for several of the surgical operations advised by the author, and outside of using several tons of perfectly good white paper, not to say anything of the many dollars of public funds spent in its preparation and distribution, we hardly think that this bulletin has much of a purpose to serve.

### A RAY OF HOPE

During the past two months newspapers all over the country have carried a syndicated article announcing the results of experiments conducted by Prof. Holger Moellgaard, head of the Department of Physiology, State Veterinary College, Copenhagen. These experiments have had for their object the development of a chemotherapeutic agent for the treatment of tuberculosis. The material used by Prof. Moellgaard is an inorganic gold compound. The following comment on his work appeared in the January issue of *Hygeia*:

"Fortunately, Prof. Moellgaard is a scientist, and not inclined to commercialize or to propagate unduly an incomplete investigation. His method has been turned over for further study to other laboratories than his own, including that of the Medical Research Council of Great Britain. Until such independent investigations have been completed, the chemical will not be available for general use, and there will be no possibility of its exploitation by those commercially inclined."

It is announced that a supply of Prof. Moellgaard's new compound is being placed in the hands of the United States Public Health Service for experimental use in this country.

### YOUR HELP IS ASKED

Frequent requests are received for a list of cities which have adopted rabies ordinances, requiring either vaccination, muzzling or quarantining of dogs. The requests come from veterinarians in localities where rabies has made its appearance, who have been consulted by the local health authorities with a view to framing an ordinance to take care of the rabies situation. When a vaccination ordinance is suggested one of the first questions usually asked the veterinarian is: What other cities have adopted such an ordinance?

In the literature of several of the biological houses the statement is made that several states, cities, towns or boroughs have adopted laws or ordinances requiring dogs to be immunized annually, but all of our efforts to secure copies of such lists have been of no avail. We are therefore asking any of our members who are located in villages, towns, cities, boroughs, townships, counties or states, which have adopted ordinances making vaccination either compulsory or optional, in lieu of muzzling or quarantine, to write us and give the name of the city or other geographical unit, and a copy of the ordinance if available.

Kindly co-operate. We want the list accurate and complete. Do not depend on your colleague to report. Do it yourself!

## EFFECT OF FREE TUITION

The big increase in the enrollment of freshman veterinary students at the University of Pennsylvania, this year, has attracted considerable attention. In his annual Christmas letter to the alumni Dean Klein made the following comment on the effect of free tuition on attendance:

A number of alumni have inquired what effect the free tuition granted to students from Pennsylvania has had on the attendance. Some light may be thrown on the influence of this factor by comparing the number of new students admitted from Pennsylvania with the number admitted from outside the State the last two years, during which the free tuition provision has been in operation, and the two years immediately preceding. The figures are as follows:

	From Pa.	From outside
1921-22 . . . . .	11	4
1922-23 . . . . .	8	4
1923-24 (free tuition) . . . . .	9	6
1924-25 (free tuition) . . . . .	17	10

## APPLICATIONS FOR MEMBERSHIP

(See October, 1924, JOURNAL)

### FIRST LISTING

BOWER, LAURENCE ROBERT	Vet. Corps, U. S. Army, Washington, D. C. D. V. M., Cornell University, 1922
Vouchers:	J. A. McKinnon and James A. McCallam
JOHNSON, O. W.	Box 90, Davenport, Wash. B. S., D. V. M., Washington State College, 1919
Vouchers:	Bernard Johnson and E. E. Wegner.
LONG, EARL F.	c/o Surgeon General's Office, Washington, D. C. V. S., Ohio State University, 1910
Vouchers:	J. A. McKinnon and James A. McCallam
MASSEY, ROY WILLIAM	532 East Haley St., Santa Barbara, Cal. D. V. M., San Francisco Veterinary College, 1916
Vouchers:	John L. Tyler and C. R. Rey.
MILLER, J. P.	Wooldridge, Mo. D. V. M., St. Joseph Veterinary College, 1920
Vouchers:	Ralph Graham and H. A. Wilson.
RODIER, EUGENE A.	Pullman, Wash. D. V. M., Washington State College, 1920
Vouchers:	E. E. Wegner and S. L. Brown.
UNBEWUST, G. A.	Harrington, Wash. B. S., D. V. M., Washington State College, 1916
Vouchers:	E. E. Wegner and S. L. Brown.
WINELAND, E. D.	Barber, Ark. D. V. M., St. Joseph Veterinary College, 1920
Vouchers:	H. W. Wilson and H. Preston Hoskins.
WOODRUFF, FRANK H.	c/o Adjutant General, U. S. A., Washington, D. C. D. V. M., N. Y. State Veterinary College, 1917
Vouchers:	J. A. McKinnon and James A. McCallam

## APPLICATIONS PENDING

### SECOND LISTING

Schmoker, Edward A., c/o Carnation Stock Farm, Tolt, Wash.  
Vasilius, George Gustav Emil, Box 52, Spencer, N. Y.

### EXECUTIVE BOARD ELECTION

Several hundred members of the Association, located in Executive Board District Number 5, have failed to avail themselves of the opportunity to send in a nomination for member of the Executive Board from that district. This is a chance that comes only once every five years. Up to January 15, one month after the nomination ballots had been mailed, about 150 had been returned and a hasty computation reveals the fact that these ballots contain the names of no less than 25 candidates. As usual, there are a number of "favorite sons" from the various states making up the district. The polls will not close until March 1. If you have not voted, do so at once. As has been said before, in these elections you can stay home and vote. The only expense is a two-cent stamp.

### COMING VETERINARY MEETINGS

Alabama Veterinary Medical Association. Short Course for Practitioners. Auburn, Ala. Feb. 2-3-4-5-6-7, 1925. Dr. C. A. Cary, Secretary, Auburn, Ala.

Kansas Veterinary Medical Association and the Fourth Annual Conference of Kansas Veterinarians. K. S. A. C., Manhattan, Kans. Feb. 4-5-6, 1925. Dr. Chas. Bower, Secretary, 1128 Kansas Ave., Topeka, Kans.

New York City, Veterinary Medical Association of. Academy of Medicine, 17 W. 43rd St., New York, N. Y. Feb. 4, 1925. Dr. C. G. Rohrer, Secretary, 40 W. 61st St., New York, N. Y.

Ontario Veterinary Association. Prince George Hotel, Toronto, Ont. Feb. 12, 1925. Dr. J. S. Glover, Secretary, Walmer Road & Bridgeman St., Toronto, Ont.

B. A. I. Veterinarians, Mississippi Valley Division, National Association of. Federal Bldg., East St. Louis, Ill. Feb. 14, 1925. Dr. G. H. Bruns, Secretary, 1216 N. 18th St., East St. Louis, Ill.

Massachusetts Veterinary Association. American House, Boston, Mass. Feb. 25, 1925. Dr. H. W. Jakeman, Secretary, 44 Bromfield St., Boston, Mass.

Oklahoma State Veterinary Medical Association. Huckins Hotel, Oklahoma City, Okla. Mar. 2-3, 1925. Dr. L. B. Barber, Secretary, 100 Live Stock Exchange, Oklahoma City, Okla.

## RECENT BUREAU OF ANIMAL INDUSTRY EXPERIMENT STATION BOVINE INFECTIOUS ABORTION STUDIES<sup>1</sup>

By E. C. SCHROEDER and W. E. COTTON,

Superintendent and Assistant Superintendent of the Station,  
Bethesda, Md.

The object of this paper is to discuss briefly some of the work the Experiment Station of the Federal Bureau of Animal Industry has done recently to throw more light on remaining bovine infectious abortion problems.

To begin with we wish to speak of the eye or, more correctly, the conjunctival mucosa and those portions of the throat which may be reached through drainage from the eye through the lacrimal duct, as a portal of entry for the *Bact. abortum*.

### INFECTION VIA THE EYE

Not long ago we reported<sup>1</sup> an experiment on the infection of guinea pigs by dropping a small quantity of a physiological salt-solution suspension of the *Bact. abortum* on their eyes. Two strains of the germ were used, one originally isolated from a cow and the other from a sow, and to each strain four groups of guinea pigs were exposed, as follows: One, a drop of suspension on the eye of each guinea pig; one, a drop of suspension into the mouth of each guinea pig; one, subcutaneous injections, and one, simple contact with the eye-exposed guinea pigs.

The suspensions were made from fresh cultures and were about five times as rich in germs as those commonly used for the bovine infectious abortion agglutination test.

Among the guinea pigs exposed to the cow strain, 33½ per cent of the eye-exposed and 66½ per cent of the subcutaneously injected, and none of the mouth- and contact-exposed developed lesions of the kind caused by the *Bact. abortum* in guinea pigs.

Among the guinea pigs exposed to the sow strain, all the eye-exposed and subcutaneously injected, and 58½ per cent each of the mouth- and contact-exposed developed characteristic lesions.

In our experience the swine strain of the *Bact. abortum*, as a rule, is more virulent for guinea pigs than the bovine, and the

<sup>1</sup>Presented at the sixty-first annual meeting of the American Veterinary Medical Association, Des Moines, Iowa, August 19-22, 1924.

bovine strain used in this experiment was only moderately virulent for guinea pigs.

Since the completion of this experiment we have used the eye method of exposure with a large number of guinea pigs that served in connection with tests concerning the production of immunity against bovine infectious abortion, and have found it to be as effective as any method of exposure likely to occur under natural conditions with which we are acquainted. For example, in one study, 74 guinea pigs were exposed via the eye to a fairly virulent abortion organism of bovine origin and 65 (87 $\frac{5}{8}$ %) developed abortion lesions.

While the results obtained with one species of animals indicate what may be expected with another species, they do not supply conclusive evidence to prove what will actually occur; hence the following test was made regarding the eyes of cattle as a portal of entry for the abortion organism:

- On February 23, 1924, a pregnant heifer, negative with agglutination tests, was selected and one drop of a suspension of a virulent bovine strain of the *Bact. abortum* dropped on one of her eyes. Two hours later, after the danger that abortion germs discharged from her eye would contaminate her environment was presumed to have passed, the heifer, together with another pregnant heifer, also negative with agglutination tests, was placed in a clean pen. The suspension was made from a single slant which had grown two days in an atmosphere rich in carbonic acid gas and two days, sealed with paraffin, in air. The suspending medium was 12 cc of a 0.85 per cent salt solution. Six guinea pigs injected each, subcutaneously, with  $\frac{1}{4}$  cc of the suspension, and three which received each one drop of the suspension on the eye and three which received each  $\frac{1}{2}$  drop on the eye, all developed characteristic lesions.

The eye-infected heifer, 36 days after infection, reacted with the agglutination test in a dilution of 1 to 50, and 54 days after infection expelled a premature, dead calf. The afterbirth was retained and 5 of 6 guinea pigs exposed to fragments of placental cotyledons and 3 of 6 to portions of the calf's organs developed characteristic lesions. The exposures were made by introducing the fragments of tissue under the skin of the guinea pigs. Cultures isolated from the guinea pigs proved to be *Bact. abortum*.

At the time the dead calf was expelled the blood of the heifer reacted with the agglutination test in a dilution of 1 to 400 and the colostrum in a dilution of 1-1600. The reaction titer of her

blood 56 days later had risen to 1-800. Milk collected separately from each quarter of the udder on the 26th and 27th days after the expulsion of the dead calf proved that one quarter was infected.

The other or check heifer calved normally in all respects and has remained wholly negative with abortion tests.

From this it seems that cattle as well as guinea pigs may be infected with the *Bact. abortum* through the eye, and that the organs reached via the eye and other possible portals are the same.

In this test the small amount of infecting material used—only one drop of a culture suspension—is quite impressive.

We tried to infect 4 pregnant sows with *Bact. abortum* of swine origin, 2 by dropping a single drop of a suspension on one eye of each and 2 by spraying a suspension with an atomizer on one eye of each, but failed to cause either abortions or reactions with abortion tests.

Infection via the eye may be practically an indirect form of respiratory or alimentary tract infection, as the germs which reach the eye may drain through the lacrimal duct in a thin stream over a considerable period of time and enter at some as yet undetermined point. Carpenter<sup>2</sup> suggests, on the basis of feeding experiments with young calves, that lymph glands which drain the oral cavity may be important channels of entry for the *Bact. abortum*. It is possible that a considerable proportion of the abortion organisms that enter the eye, after passage through the lacrimal duct, may reach such glands.

That the abortion bacterium enters the body through the lymph glands that drain the mouth or throat is, to say the least, an interesting and plausible theory, particularly if we weigh it in the light of the knowledge that the germ is quite rapidly destroyed in the bodies of cattle elsewhere than in the udder, pregnant uterus and testicle, and that it may be enabled to reach the blood stream more quickly through the mouth and throat than through other glands, and be rapidly carried in the blood to and deposited in those portions of the body favorable to its preservation and multiplication.

Guinea pigs infected via the eye usually show an enlargement of the throat glands, which in some instances is very great, but we have never observed lesions of the conjunctiva as the result of dropping abortion germs on their eyes, even when strains from

swine were used, which often cause grave eye lesions in guinea pigs injected with them.

The importance of the eye as a portal of entry for the *Bact. abortum*, of course, we do not know, but, if we take into account the small amount of suspension with which the heifer was successfully infected, it would seem that discharges from infected cows at the time of abortions and parturitions may easily be sprayed into the eyes of susceptible cattle in sufficient amount to infect them. Likewise, drops of dew or rain splashed or sprayed into the eyes from grass or weeds during pasture on freshly infected fields may be dangerous. Less probable, but not wholly to be ignored, is the possible danger from dust, as we do not yet know how quickly the *Bact. abortum* is killed by drying.

#### CATTLE AND SWINE STRAIN OF THE BACTERIUM ABORTUM

At the St. Louis meeting of this Association two years ago we called attention<sup>3</sup> to the marked difference between the lesions caused in guinea pigs by cattle and swine strains of the *Bacterium abortum*. The swine strain commonly is more virulent for guinea pigs and in addition often causes lesions unlike those caused by the cattle strain. We suggested that the swine strain probably was infectious for both cattle and swine, as we had caused a cow to abort by injecting her intravenously with a suspension of a culture of the swine strain and had afterwards recovered the organism from her placenta and milk. But our experiments had not progressed far enough to show whether cattle could be infected with this strain through more natural methods of exposure. Since then additional work on the subject has been done.

1. A herd of 23 cows, relatively immune against the *Bact. abortum* of bovine origin because the infection had existed in it for a number of years, was fed cultures of the bacterium of swine origin to determine whether this would cause an increased manifestation of abortion disease. The beginning of this work was reported at the St. Louis meeting, as, at that time, following the feeding, the current number of abortions in the herd had somewhat increased. But since then we have not been able to isolate anything from the aborting cattle or the products of their abortions but typical cattle strains of the *Bact. abortum*. While it is not absolutely certain that the exposure of the cows did not reduce their resistance against the cattle strain of the germ long present in the herd, we are not inclined to accept this as an expla-

nation, as it seems more reasonable to assume that the increased number of abortions following the feeding of the swine strain was merely a coincidence.

Later we injected pregnant cows intravenously with swine abortion cultures and permitted them to abort in the herd, but this work has not supplied the least evidence that such natural exposure to infection has caused a single member of the herd to become infected with the swine strain of the abortion germ, or that it has notably increased the number of abortions in the herd.

2. Attempts to infect abortion-susceptible cows through feeding them definitely proved, typical swine strains of *Bact. abortum* were made as follows:

A pregnant heifer was given three feedings, within a week, of suspension of a pure culture of *Bact. abortum* of swine origin. She produced a normal calf 134 days after the first feeding. Guinea pig inoculations of portions of placenta were negative and the heifer never reacted to the agglutination test. Another heifer, not pregnant, was fed in a similar way; she reacted with the agglutination test 20 days after the first feeding. The reaction, however, had practically faded out 24 days later.

Two pregnant heifers were each given 9 feedings of a suspension of a pure culture of swine origin within two weeks. One of the heifers gave birth to a normal calf 92 days after the first feeding. Guinea pigs inoculated from the placenta were negative. The heifer gave an agglutination reaction of 1-50 a month after the last feeding, but this had disappeared a month later, and at parturition both her blood and colostrum were negative. The other heifer died of an intercurrent affection a month after the last feeding. Her uterus contained a 7-months fetus. Guinea pig inoculations from the fetus were negative. As in the case of her mate the blood of this heifer reacted at 1-50 and showed a partial reaction at 1-100 with the agglutination test a month after the last feeding.

One pregnant heifer and a pregnant sow were given three feedings of a pure culture of swine origin, within a week. The heifer gave birth to a normal calf 130 days after the first feeding. Her afterbirth was lost but guinea pigs injected with uterine discharges and colostrum were negative. Her blood, 22 days after the first feeding, reacted in a dilution of 1-200; the reaction declined to 1-50 in the course of 24 days and a month later had practically disappeared.

The sow gave birth to 6 living pigs 14 days after the first

feeding. Guinea pig inoculations from the fetal membranes were positive and the blood of the sow, 4 days after parturition, reacted to the agglutination test in a dilution of 1-50, but this reaction had disappeared six and one-half months later.

One pregnant heifer was given 10 feedings, on consecutive days, of suspensions of pure culture of *Bact. abortum* of swine origin. She gave birth to a normal calf 53 days after the first feeding. Guinea pigs inoculated from the placenta were negative and the blood of the heifer remained negative to the agglutination test throughout the experiment.

One heifer was fed three times within a week with an emulsion of diseased organs of guinea pigs that had been inoculated with a *Bact. abortum* culture of swine origin and which showed the typical lesions of the swine strain. She gave birth to a normal calf 53 days after the first feeding. Guinea pigs inoculated from her placenta were negative and her blood was and remained negative with the agglutination test.

In contrast to the above, a pregnant heifer that was given 10 feedings of a *Bact. abortum* culture of bovine origin, on 10 consecutive days, gave birth to a weak calf, about two weeks premature, 47 days after the first feeding. The calf died within a few hours without taking nourishment. Guinea pigs inoculated with placental cotyledons and with stomach fluid of the calf developed unmistakable lesions of abortion disease. The colostrum reacted with the agglutination test in a dilution of 1-200, and a month and a one-half later the blood reacted in a dilution of 1-400 or more, and 10 months later the blood reacted in a dilution of 1-800. This cow produced another weak calf 13 months after the first, which also died without taking nourishment, and both the placenta and fetus were proved by guinea pig inoculation to be infected with abortion germs.

We have repeatedly infected cows by feeding them cattle strains of the *Bact. abortum*, and sows by feeding them swine strains, and have recovered the swine strain from the seminal vesicles of boars fed cultures of this strain, but we have thus far failed, by natural modes of exposure, to infect cows with swine strains or swine with cattle strains. Our experience therefore inclines us to believe that there is a distinct bovine and a distinct porcine type of the *Bact. abortum*, in some respects as dissimilar as the human, bovine and avian types of the tubercle bacillus.

The low virulence of swine strains of the *Bact. abortum* for cattle is shown by the low agglutination reactions of short dura-

tion which result from feeding such strains to them. Some of the germs no doubt enter the body and stimulate the production of agglutinins, but the transient character of the reactions indicates that the bacteria are rapidly eliminated or destroyed.

While the swine strain of the *Bact. abortum*, in a general way, is related to swine as the bovine strain is related to cattle, we are not ready to say that there are no differences in the relation of the two microorganisms to their respective, specific hosts. For example, we have never succeeded in infecting bulls by feeding them abortion germs. On the other hand, we succeeded in isolating *Bact. abortum* from the seminal vesicles of two of four boars which had been exposed through feeding. The boars were killed 177 days after the last exposure, at which time they reacted with the agglutination test in a dilution of 1-100; no lesions were found in their genital organs and no abortion germs in their testicles or epididymides.

Though this evidence is meager in amount, and the possibility that bulls may become infected through the ingestion of abortion bacteria cannot be denied, it suggests that boars may be a more important factor in the dissemination of swine abortion than bulls in cattle abortion.

Again, though our frequent attempts to isolate the abortion bacterium from the ovaries of infected cows have given wholly negative results, we have one case of a sow in which the ovaries were proved to be infected and another case, which was not examined with sufficient thoroughness to be positive about it, in which they probably were infected.

The history of the positive sow is as follows: Exposed to abortion infected sows; about two weeks later gave birth to pigs; did not conceive again for a period of about 15 months; was killed and examined postmortem. At the time of death the blood reacted with the agglutination test in a dilution of 1-400. The ovaries contained a number of small necrotic foci. Tests of the ovaries showed the presence of the *Bact. abortum*.

The other or doubtful sow has a quite similar history, but no bacterial study of the necrotic foci in her ovaries was made.

#### POSSIBLE DEPENDENCE OF BOVINE AND SWINE STRAINS OF THE BACTERIUM ABORTUM ON ENVIRONMENT

We are now passing a cattle strain of the abortion organism through a series of swine and a swine strain through a series of

cattle, to determine whether either may tend to acquire the character of the other.

This work has not progressed sufficiently to supply data for reliable conclusions, but so far no modification of either strain, or the closer approach of either to the other, has been observed. The available results imply that the strains of the *Bact. abortum* which attack cattle are of little or no epizootiological significance for swine, and that those which attack swine are of no such significance for cattle.

It is important to bear in mind that the dilutions in which the blood of abortion-infected swine reacts with the agglutination test are lower as a rule than the dilutions in which the blood of infected cattle reacts, and that the reactions in swine are less persistent. Hence, reactions which indicate the presence of infection are lower in swine than in cattle. It is also important to remember that abortion organisms have been found in a larger number of regions in the bodies of swine than in those of cattle, and that we must not be too hasty in assuming that our knowledge of the etiology of infectious abortion among cattle may be applied without reservations or modifications to swine.

#### GUINEA PIG STUDIES ON IMMUNIZATION

Investigators who have worked with the *Bact. abortum* know that different cultures of the organism vary greatly in their pathogenic virulence for guinea pigs and, also, that cultivation under artificial conditions often leads to marked changes in virulence.

At the Experiment Station we have a culture of the *Bact. abortum*, isolated from a cow 9 years ago, which has lost so much of its original, high virulence for guinea pigs that it causes lesions in them only when they receive injections of very large doses. An interesting thing about the germ is that it can be recovered from the spleens of guinea pigs in which it causes no macroscopic lesions two months after they have received injections of moderate doses.

The Station also has another culture, isolated from milk in 1910, which has shown a similar but less marked decline in virulence for guinea pigs.

Both cultures cause abortions in cattle exposed to them through intravenous injections but not when exposed via ingestion; hence, the reduced virulence for guinea pigs is accompanied by a reduced virulence for cattle.

In a preliminary test regarding the possible use of the attenu-

ated cultures as immunizing agents against bovine infectious abortion, we have used guinea pigs, as follows:

Thirty-three guinea pigs were given each a subcutaneous injection of a heavy suspension of the first or lesser virulent of the two cultures. Eighty-one days later, 12 of the guinea pigs, with 12 check guinea pigs, were given subcutaneous injections of a suspension of a virulent bovine strain of *Bact. abortum*, and 6, with 6 checks, subcutaneous injections of a virulent swine strain of *Bact. abortum*. One hundred forty-five days after treatment, 10 of the remaining treated animals, with 12 checks, received subcutaneous injections of a virulent bovine strain of *Bact. abortum* and 5, with 6 checks, injections of a virulent swine strain.

All the guinea pigs were killed and examined postmortem about two months after their injection with virulent strains of the abortion germ, and the results were as follows:

12 treated guinea pigs, exposed 81 days after treatment to virulent, bovine strain of abortion. 9 showed no macroscopic lesions; 2 showed slight lesions, and 1 showed more marked lesions.

12 checks on the above. 9 showed marked and 3 slight lesions. The lesions in the three positive treated animals, in distribution and magnitude, on a general average, compared to the lesions in the checks as 1 is to 7. That is to say, the treatment with the attenuated germ not only prevented the development of lesions in 75% of this group of treated animals, but also greatly checked the development of lesions in the remaining 25%.

6 treated guinea pigs, exposed 81 days after treatment to a virulent, swine strain of abortion. 2 showed no lesions, 2 showed slight lesions and 2 more marked lesions.

6 checks on the above. 1 showed no lesions and 5 showed marked lesions.

The distribution of the lesions in the two groups of positive animals was alike, but their magnitude in the check animals was much greater.

10 treated guinea pigs, exposed 145 days after treatment to a virulent, bovine strain of abortion. 5 showed no lesions, 4 showed slight lesions and 1 more marked lesions.

12 checks on the above. 1 showed no lesions, 4 showed slight lesions and 7 showed extensive lesions.

The lesions in the positive treated animals, in distribution

and magnitude, compared, on an average, to those in the untreated animals, as 1 to 3.

5 treated guinea pigs, exposed 145 days after treatment to a virulent swine strain of abortion. 5 showed lesions which in all cases were slight.

6 checks on the above. 6 showed extensive lesions.

The lesions in the two groups, on an average, in distribution and magnitude, compared as 1 is to 2.

From this experiment it seems fair to conclude that guinea pigs may be given a high degree of resistance against virulent abortion germs by injecting them with attenuated abortion germs; that the immunity resulting from the injection of attenuated germs begins to decline sometime after the third month following the immunizing injection, and that attenuated bovine strains of the *Bact. abortum* of bovine origin have considerable immunizing value against both virulent strains of bovine and swine origin.

It further justifies the conclusion that it may be profitable to test the virtue of attenuated strains of the abortion bacterium as immunizing agents for cattle and swine, as it is possible that, with greatly reduced danger, several properly timed doses of a living but virtually innocuous strain, injected during pregnancy, may give results fully as valuable, or even more valuable, than a single injection, sometime before conception, of a dangerously virulent strain or a miscellaneous mixture of virulent strains.

However, in the use of any attenuated virus for the production of immunity, we should never lose sight of the fact that an organism which may vary in one direction may vary back again to its original state. In other words, an attenuated organism must always be looked upon as having the potency to return to virulence.

#### AGGLUTINATION REACTIONS AND THEIR SIGNIFICANCE

Not long ago we published a short article<sup>4</sup> on the agglutination titer as a means to determine whether cattle are or are not carriers and possible disseminators of abortion germs. Our data at that time showed, and since have continued to show, that cows which react in a dilution of 1-100 or less do not harbor abortion bacilli in their udders, and that a large proportion of cows that react in a dilution of 1-200 or more have infected udders. The plain fact of the matter is this, with the manner in which the agglutination test for bovine infectious abortion is made at the Experiment Station, we have never found a bovine

animal in which the agglutination reaction failed to be stronger than distinctly positive in a dilution of 1-100 a month after the termination of all exposure to infection, of which we could say that we had proved it to harbor abortion germs in its body.

The importance of being able to say, through the proper use of the agglutination test, whether an animal is safe or dangerous so far as the dissemination of abortion germs is concerned, is a matter that requires no argument.

From this it must not be concluded, off hand, that a low reaction means that a cow is not dangerous. A low reaction may be the beginning of a high reaction, and a low-reacting cow, shortly after her removal from a source of infection, may become a high-reacting cow. And, what has been said about cattle does not apply to swine, as we have had cases in which swine, afterwards proved to be carriers of abortion germs, reacted in dilutions no higher than 1-50.

Another thing regarding this matter of serum tests for infectious abortion. If the information we have at hand is reliable, both the agglutination and the complement-fixation tests are in urgent need of some kind of reasonable standardization. Until these valuable tests have been standardized it will be impossible to compare the results obtained at any two or more establishments, and reactions, in the terms in which they are expressed, may mean little until we know where and by whom the tests were made.

We hear much talk about the use of more or less drastic regulatory measures against the spread of infectious abortion, and in most instances the measures advocated propose to use biological tests in one way or another.

Without entering into a discussion of the advisability of laws and regulations, one thing is quite clear to our minds; no law or regulation which requires the use of an unstandardized test, which therefore may give quite different results in the hands of different persons who honestly use it to the best of their knowledge and ability, can be enforced in a way which will make the benefits it confers worth the price that must be paid in disturbances and annoyances and injustices of various kinds it is apt to cause.

Finally, in conclusion, we wish to say that the knowledge we have today on the various portions of the bodies of cattle that may harbor abortion germs, and on the periods of time at which abortion germs may be disseminated by infected cattle, etc., is based on a really very small amount of work done by a small

number of investigators. More work along this line is eminently desirable; we would better say, urgently necessary.

The Station has been doing a considerable amount of work during the last two or three years to determine whether infected cows periodically or occasionally disseminate abortion bacilli during the period of gestation. So far the results are negative, but the amount of work done is not sufficient to justify its use as the basis for conclusions.

#### REFERENCES:

- <sup>1</sup>Schroeder, E. C. and Cotton, W. E.: Infection of guinea pigs via the conjunctival mucosa with the bacillus of bovine infectious abortion. *Jour. A. V. M. A.*, lxxv, n. s. 18 (2), p. 211-214.  
<sup>2</sup>Carpenter, C. M.: Bacterium abortum invasion of the tissues of calves from the ingestion of infected milk. *Corn. Vet.*, xiv (1), pp. 16-31.  
<sup>3</sup>Cotton, W. E.: The character and possible significance of the Bang abortion bacillus that attacks swine. *Jour. A. V. M. A.*, lxii, n. s. 15 (2), pp. 179-192.  
<sup>4</sup>Schroeder, E. C. and Cotton, W. E.: Carriers of Bang abortion bacilli and the agglutination test. *Jour. A. V. M. A.* lxxv, n. s. 17 (4), pp. 479-481.

### BE ON YOUR GUARD

A communication has been received from the Department of Police of the city of Waterloo, Iowa, asking our members to be on the watch for one H. C. Helms, who recently victimized Dr. Lawrence P. Scott, of that city, to the extent of \$150.00, by means of a worthless check.

This scoundrel is said to be a polished confidence worker and is known to have swindled veterinarians and cattle breeders in Iowa, Minnesota, Michigan, Kentucky, Tennessee, New York, Indiana and Vermont. He is very well posted on pure-bred dairy cattle and usually plays his game by representing himself as an agent commissioned to buy cattle for some large dairy.

As a result of the publicity which has been given to this fellow among pure-bred cattle breeders, through their respective breed associations, these men have been put on their guard, and it would appear that Helms is now preying upon veterinarians.

Dr. W. D. Inglis, of Portsmouth, N. H., is reported to have been a victim to the extent of \$85.00 through having endorsed a forged check for that amount, ostensibly drawn by Dr. W. L. Thompson, veterinarian of Suffolk, Va. The check was drawn on the American Bank and Trust Company of Suffolk.

The following description of Helms is given by the Waterloo Police Department: Age 30, height six feet, weight 170 pounds, brown hair, blue eyes, smooth shaven, straight nose, good teeth, neat appearance, wears dark clothes and brown fedora hat.

If you should be approached by this party, secure his arrest and wire the Waterloo, Iowa, Department of Police, collect.

## WHO SHALL VACCINATE MY HOGS?<sup>1</sup>

*By I. K. ATHERTON, College Park, Md.*

This would appear to be a question, foolish in the highest degree, were it not for the fact that the existing unsatisfactory hog cholera situation is in a measure the result of the maladministration of anti-hog cholera serum or the serum-virus treatment.

By maladministration reference is made to the use of these biologics when unnecessary or even when contra-indicated, as well as to the lack of proper technic in their injection into swine.

Anti-hog cholera serum and hog cholera virus were offered to the public about 1907. At the meeting of this Association held in 1908, Dr. A. D. Melvin, then the chief of the Bureau of Animal Industry, read a paper under the title "Control of Hog Cholera by Serum Immunization." In this paper, he expressed his belief that the serum could be used as a factor in the eradication of the disease. But mark you, he recommended it only as a supplementary factor, and urged that the employment of sanitary measures was also essential. Sixteen years have elapsed since Dr. Melvin broached the subject, but what has happened in the meantime? By 1914 serum was available for all who desired to use it. But for the 10-year period ending April 30, 1924, not only have 32,207,350 hogs, valued at \$405,561,018.00, been lost from the disease, but approximately another hundred million dollars has been expended for serum, virus, veterinary fees, etc., and hog cholera is acknowledged still to be the most serious disease of swine with which we have to contend.

It would appear that instead of any gain having been made in the eradication of hog cholera during this period, we have simply compiled a mass of figures representing stupendous losses. The explanation of this deplorable condition is undoubtedly the hit-or-miss policy in the use of serum or serum-virus treatment and the ignoring of the sanitary measures which Dr. Melvin insisted should be given consideration. We believe now, as Dr. Melvin did then, that vaccination can be used as an agent in the eradication or rather prevention of the disease, but the experience acquired during the past sixteen years makes it more and more evident that sanitary measures must be adopted that will prevent the introduction, harboring and spread of the

<sup>1</sup>Presented at the sixty-first annual meeting of the American Veterinary Medical Association, Des Moines, Iowa, August 19-22, 1924.

infection, or no further progress will be made in our fight on the disease in the next sixteen or even one hundred years.

In order to discuss this question intelligently we believe it necessary first to consider the purpose for which we vaccinate swine. While we have heard enthusiasts on the subject make claim that administration of the biologics acted as a tonic to hogs, yet we believe it will be conceded that the primary reason for employing the treatment is to save swine from the danger of hog cholera. Accepting this as a fact, then we open the question as to whether vaccination is the only means of protecting swine from cholera. However, we shall not at present digress from our subject, but will refer to this point later.

#### POTENCY AND VIRULENCE NECESSARY

In the vaccination of swine we cannot be governed by any inflexible rule as to the conditions under which these biologics are indicated, dosage of same, etc., but must be guided by our knowledge of symptomatology, pathology, sanitary science, etc. One of these products must possess dependable potency, and the other the highest possible degree of virulence. While the serum is not capable of producing cholera in swine, yet the virus must be used with the greatest caution. Although there is no danger of producing cholera with serum, yet its use is indicated only for the protection of hogs from cholera, and if any other disease or condition exists then the serum will be of no value or is even contra-indicated and the desired results will not be obtained by its use.

If, as we stated before, the administration of the serum treatment is for the protection of swine from the danger of hog cholera, then our motive in its use is a monetary proposition and should be viewed from that point. Therefore, the number of animals saved as well as the dangers that might accrue to other swine from the use of the biologics, and also the cost of administration, must be given consideration. This, then, brings up the point of layman and veterinary vaccination.

We hear much about so-called layman or farmer vaccination. In fact, we have farmers in many sections clamoring for permission to do this work, and we even have such persons insisting they can administer the treatment as well as veterinarians. In some states laws have been put on the statute books that permit the administration of serum and virus by laymen. In other states efforts are being made to have such laws passed, and still in other

localities these biologics are administered by Tom, Dick and Harry, regardless of their qualifications.

Before proceeding further, it might be well to consider who and what is responsible for this so-called farmer vaccination. Certainly, the farmer himself is not entirely to blame. It was not laymen that developed these products, therefore, the information they have obtained on the subject has certainly been derived from veterinarians. In fact, going back to the first conference of state and government officials that was held to discuss these then recently developed biologics, a certain veterinarian is credited with the statement that he "could in 20 minutes teach any kinky-headed nigger how to give the serum and virus." In a circular issued by another state, in regard to the vaccination of swine, we find this enlightening bit of information: "Persons who desire to perfect themselves in the technique of vaccination so that they may vaccinate their own hogs are advised to write and arrange for personal instruction."

#### VACCINATION BY LAYMEN INADVISABLE

It is not infrequent that we find officials, even where the services of veterinarians are available, teaching laymen how to inject serum and virus into hogs. On the other hand, many officials who will not teach laymen how to administer the double treatment where the services of veterinarians are available will do so in the absence of veterinary service, on the grounds that this treatment is essential for the protection of swine. It does not appear that they are consistent in this attitude. That "breaks" at times follow the administration of the double treatment, even when administered by competent veterinarians, is acknowledged by all. That they occur more or less frequently when administered by laymen is also true. Therefore, permitting laymen to administer the double treatment where veterinarians are not available to attend to the "breaks" is, to my mind, a bad piece of business, and will start outbreaks of hog cholera where they can be given the least attention.

It is almost impossible to go through any bulletin regarding hog cholera without finding carefully written directions how to administer serum and virus. It is explained as simplicity itself, although in but few if any of these bulletins do we find any reference to any other means of protecting swine from hog cholera. In other words sanitary procedure as applied to the disease is practically ignored. As a matter of fact, the farmer is often urged

to practice methods of swine management that are absolutely contrary to sanitary procedure. Therefore, the farmer knows of but one method of protecting his swine from the disease, in fact, he is even urged to rely on it entirely, and this has been made to appear so simple to him that he is practically urged to do his own treating.

The practicing veterinarian cannot dodge his share of the responsibility for farmer vaccination. We do not mean to infer that practicing veterinarians as a whole are delinquent in their duties. However, certain of these men have practiced methods that are not above reproach.

It is not at all uncommon to have a veterinarian relate instances of his rapid-fire work. He will first tell you the distance it is to a certain farmer's place; then how he jumped into his automobile; drove to the farm; vaccinated so many hogs; and was back to his office within a comparatively short time. If that person would only stop to think, he would realize that he was advertising the fact that he went out and did that farmer a job in a shorter period of time than competent veterinary service could have been rendered.

#### CONTRACT WORK LEADS TO TROUBLE

Then, again, we have the veterinarian who is inclined to do contract work. Veterinarians in certain localities have reputations of doing the work more cheaply than the other fellow. To do the work for the price that is often contracted for means less than a minimum dose of serum. Consequently losses and dissatisfaction.

There is then a small percentage of veterinarians who are inclined to overcharge. While it is admitted that such men are in a minority, yet we do have instances where farmers are loath to have the treatment administered to their hogs on account of the excessive fees that are demanded for the work. We recall one instance where a veterinarian vaccinated twenty-two sows and shotes, for which he made a charge of \$94. The distance from his office to the farmer's place was approximately only eight miles. Only one animal in the herd was sick. Yet, had he used the amount of serum he charged for, the animals would have been top-heavy, and he priced this biologic at 4 cents per cc.

We have veterinarians who administer serum, or serum and virus, in sick herds, without determining the nature of the trouble by a postmortem examination. We have known veterinarians

who used such treatment in sick herds where hog cholera did not exist. Yet at the time the treatment was administered, carcasses of animals that had died but a few hours before were available for a postmortem examination. We have even known of practicing veterinarians who did not carry a clinical thermometer with them. In fact, we had an instance of a veterinarian making a diagnosis by poking the animals with a cane.

We have known veterinarians who stood around on street corners and sold the double treatment as the automobile salesman offers his machines. We have even known them to give a farmer a special inducement to have the treatment administered. Then, after this farmer had been induced to have the virus given to his hogs, it was used as an argument why the neighbor should also have it done. It is obvious that when such conditions exist the work will often be done in a slip-shod manner. We visited a farm one day where a veterinarian was administering the serum treatment to a bunch of sick hogs. In fact, every animal was so ill that it was weak and wobbly. The veterinarian had poured the serum in a cracked, open bowl and this was sitting on the floor of the hog pen. The only reason that the hogs did not step in it was apparently because they were not strong enough to walk. When a careful farmer sizes up such work, he realizes that he not is getting competent veterinary service, and for this reason he thinks he can do as well himself. He is more than ever inclined to try it when bad results follow the administration of the treatment in this unprofessional manner.

#### SOMETHING FOR NOTHING

There is still another factor that must assume a share of the responsibility for layman vaccination, and that is the extension services of the universities of some states. In this great state of Iowa, which maintains a veterinary college second to none, one of the inducements which was offered farmers in order to get them to join the movement for the employment of a county agent was that such an official, by vaccinating their hogs, would save them as much or more than their annual dues would amount to. In many counties, county agents devote a large part of their time to vaccinating hogs, and in others they advocate farmer vaccination. In a little pamphlet issued by the American Farm Bureau Federation, under the title, "Putting the Farm Bureau to Work," we note the following item: "Arrangements made for conducting hog cholera vaccination schools." In Maryland

neither county agents nor specialists are permitted to vaccinate swine as a matter of favor or economy for any person nor to give demonstrations of the use of the serum treatment where the services of veterinarians are available.

Another factor that is fostering farmer vaccination is certain serum companies. While we appreciate that most of the serum companies do not want their products used by laymen, and especially when the virus is employed, yet we do have companies who make a bid for the farmer's patronage. One company in particular urged farmers, with follow-up letters, to vaccinate their own hogs. In these communications they stated that the records showed that there was hog cholera within fifty miles of the farmer's premises. They offered to send these farmers serum and virus direct, even though it was contrary to the laws of Maryland to ship virus except on a veterinarian's certificate. In another "ad" noted recently a vaccinating outfit was offered at a very low price and farmers were urged to "vaccinate your hogs yourself and save over half the cost." It stated nothing about saving the hogs.

#### A FEW COMPARISONS

At this point we might consider results following layman vaccination by comparing it with such work when done by veterinarians.

We have written to a large number of officials and veterinarians in most of the hog-raising states, regarding this phase of the subject. It is a regrettable fact that exact data on this score are not available. We believe this situation is really deplorable, for we are sure that if such information could be secured it would be the best argument against layman vaccination.

The officials in one state, where the double treatment is used almost exclusively, sent out questionnaires last year requesting data on farmer vaccination. It is again regrettable that many veterinarians who had the opportunity to furnish the desired information disregarded their duty in this respect. From the information acquired by these questionnaires, it was noted that layman vaccinators were not inclined to restrict their operations to their own herds. In some localities the results following layman vaccination were really disastrous. From the comparison that could be made, it was apparent that unsatisfactory results were obtained in six times as many herds following layman vaccination as when it was done by veterinarians. In 50 per cent of the

localities where layman vaccination was used it was apparent that new outbreaks of hog cholera were started as a result.

A certain state veterinarian makes the following statement. "I can state without fear of contradiction that more trouble has come to our department from the vaccination of swine by laymen than from any other source." Another official states that from personal experience in the field he knows that the greater portion of layman vaccination is not followed by favorable results.

In another state there is a certain county that has gained a more or less unfavorable reputation because of the activities of laymen in that county vaccinating swine. The chief veterinarian of the state in which that county is located makes this statement: "We have one county in this state doing quite a bit of this work, and the serum is handled by them. This county has caused us more trouble than any other in the state."

In Maryland we have some statistics which were compiled from questionnaires that are sent out to each hog owner thirty days after an outbreak of hog cholera has occurred. These questionnaires request data as to whether or not the swine were vaccinated, and if so if the treatment was administered by laymen or veterinarians; the number of hogs treated, etc. In this connection, it would be well to state that in Maryland we have nine counties without veterinarians. Therefore, laymen frequently administer the serum-alone treatment in these localities. They often save many hogs, but under no conditions are they permitted to administer the double treatment.

#### SOME ACTUAL FIGURES

We will not tire you with a long list of figures, but will quote you percentages in as short a form as possible. The data given covers a period of four years—1920 to 1923 inclusive. The reports are based on 256 herds, containing 3970 hogs, that were treated by laymen, and 486 herds with 11,474 hogs treated by veterinarians. A total of 736 herds, with 15,444 swine.

The records show that during this period 38 per cent of the swine on the premises were sick at the time of treatment. This applies to both veterinarian and layman vaccination. It is interesting to note, however, that the laymen deemed 10 per cent of the hogs too sick to treat, while the veterinarians passed up only 8 per cent on this account.

Of all the hogs on the premises at the time of treatment,  
61.25% survived when the vaccinating was done by laymen.

74.25% when the work was done by veterinarians.  
Of the hogs that were apparently well when treated,  
  81.5% lived when the treatment was administered by laymen.  
  92.75% when treated by veterinarians.

Of the swine that were sick when treated,  
  24.5% lived when treatment was given by laymen.  
  37.75% survived following treatment by veterinarians.

This shows that, on an average, veterinarians saved 13 per cent more swine than when the work was done by laymen. This means that veterinarians saved 13 more hogs out of every 100 treated than did laymen. During the four-year period covered by these questionnaires the average price of swine was \$14 per head. This showed a profit in the favor of veterinary vaccination of \$182.00 for each 100 hogs treated. Certainly it is clear that the laymen could have employed a veterinarian to have done the work and had a handsome profit over and above what the serum cost him when he did the work himself.

#### MORE THAN VACCINATION REQUIRED

There is some interesting data in connection with these outbreaks that has a direct bearing on the point which we raised earlier in this paper, and that is the question whether vaccination is all that can be done to protect hogs from cholera. The records show for the period referred to, in cases where we could get a history bearing on the source of infection, 84 per cent of the new or primary outbreaks were apparently due to infected pork in garbage, table scraps, etc., 15 per cent to the introduction of new stock, and 1 per cent to "breaks" following the administration of the double treatment.

Regarding these sources of infection, we believe it obvious that all are preventable and, therefore, that a large percentage at least, if not all of the outbreaks covered by the reports, were practically unnecessary. Here is where the hog raiser and not the veterinarian has his inning. The prevention of the introduction, harboring and spread of hog cholera infection can be accomplished only by strict observance of sanitary measures. In this part the veterinarian can only advise, but the farmer is the one who must carry out the provisions of the advice given. Therefore, the farmers' place in the hog cholera work is to practice sanitary methods of swine management, and until they devote their time and attention to this phase of the subject, they will continue to pay heavy toll to the disease.

While it is obvious that farmers and hog raisers, by using care or employing sanitary methods, if you please, can largely if not entirely prevent the introduction, harboring and spread of the infection, yet as a matter of fact we know that there is a certain percentage of them who will not do it. Many of them will not make even an attempt to follow the precautions recommended.

It is evident, then, that until government and state officials unite and make an effort not only to determine the source of infection in new outbreaks, but to prevent the spread of the virus, by the known methods of dissemination, and control its movement in the bottle, that more or less extensive vaccination of swine will be necessary. In fact, it will be several years after such concerted action is started before there will be much reduction in the necessary vaccination of swine. It remains, then, for the veterinary profession to see that vaccination of swine with serum or serum and virus is properly used and in conjunction with rational sanitary procedure. We believe the following qualifications are essential for the person who shall vaccinate my hogs.

#### QUALIFICATIONS REQUISITE

He must, first of all, be a graduate of a reputable veterinary college, though this alone does not qualify him to vaccinate swine properly.

He must be sufficiently familiar with sanitary science to advise when the vaccination of swine is necessary, and not urge the treatment of hogs on no better grounds than it is "good insurance."

He must be a person sufficiently familiar with diseases of swine to differentiate between the different ills to which hogs are heir, and have a sufficient knowledge of anatomy and gross pathology to conduct an intelligent postmortem examination.

He must be a person who is trying to do conscientious work, and able to estimate the weights of hogs, and not inclined to skimp on the dosage of serum and virus. We have known of veterinarians who advocated the use of the double treatment, yet gave such small doses of virus that the farmer did not get the protection for his swine that he thought he was paying for.

He must be a person who uses scrupulous cleanliness in the care of the vaccination outfit. We have seen syringes taken apart for repair when it was necessary not only to use heavy pliers to unscrew the parts, but to break the glass barrel before it could be removed from the syringe.

He must be sufficiently familiar with the handling and feeding of swine to give intelligent instructions regarding the care of animals after treatment, whether it be in a sick herd or even a well herd to which the double treatment is administered. We have seen disastrous results follow vaccination as a result of improper diet.

He must be a person who wishes to take every precaution possible to prevent a "break" following the administration of the double treatment, and will make a careful examination of the animals before treatment. We have known veterinarians who administered the double treatment to animals where there was a heavy ascarid infestation; where the animals were still suffering from the results of castration; where it was plain that the animals had been on an unbalanced ration, and where runty and unthrifty pigs were given the treatment.

He must be a person who recognizes the danger in the administration of the living organism, and will not use it unless an apparent necessity exists. We have known outbreaks of cholera to be started in free localities by virus introduced in a bottle.

He must be a person familiar with the nature of the biologics used and who recognizes the dangerous characteristics of the virus and will take every precaution to prevent contamination of the premises by the careless handling of the product. We have known veterinarians who, after finishing a job of vaccination, threw the empty virus bottles in small streams.

Viewing the situation as a layman, living in a locality where the services of a veterinarian are not available, I will, as should the farmers more favorably located, use every means that may come to my knowledge to keep hog cholera infection from my herd. If it should be apparently necessary to vaccinate my hogs, I will use the serum-alone treatment, to the best of my ability, but appreciating my lack of knowledge regarding the use of the double treatment, I would not use it myself, nor do I want my neighbors, who are no better qualified, to be permitted to use it.

#### DISCUSSION

**DR. J. I. GIBSON:** I think that Dr. Atherton handled this subject in a very straightforward manner, and he told us many unquestionable truths in connection with the vaccination of swine. I have always considered the passing of the active virus of hog cholera to the laity was a dangerous procedure. At one time I could tell how many barrels were distributed into the hands of persons in all degrees of incompetency in this fair state of Iowa.

Dr. Atherton has been doing splendid work in Maryland. He has given us some very interesting letters. I don't know how many here have received them, but I am glad to be on his mailing list, and to know something about what, he finds, is causing the outbreaks of cholera in Maryland. His charging up

the large percentage to the feeding of infected garbage has already been proven and demonstrated in the Dominion. There is no question in my mind that it is a great source of cholera infection.

I believe the veterinarians should have this vaccination, and in order to have it, I believe, they should practice vaccination with a great deal more care than they do in some instances. I believe veterinarians should quit talking about "shooting" serum. My counsel has always been, "I wish you would not 'shoot' any serum. I wish you would work as fast as you can, and when you get ready, inject the serum." I think that great harm has come in the formation of abscesses by "shooting" serum.

There is one thing which has never been worked out in the use of serum. I think serum has a curative action, and the reason it does not cure more hogs which already have cholera is because they are not in condition to absorb the serum and get the results. If a hog has three or four days to live, if the serum can be distributed in the blood, I think it has a curative action and may save the life of the hog; in such cases, if the serum could be injected intravenously, curative action would be the result in many cases. It is not absorbed when we inject a large quantity in the tissues. On the whole, I want to congratulate Dr. Atherton on having the courage to write this paper and put the truths in it which he has put in and read. There are a whole lot of veterinarians who would not have the nerve to do what he has done, and I commend him for it.

DR. H. A. WILSON: I have enjoyed this meeting so far, and it is such an interesting meeting that I do not want to take up your time, as I would much rather listen to others talk than attempt to do any of the talking myself, for I am like Uriah Heep, in David Copperfield, "I am a humble person, sir." But I do want to congratulate Doctor Atherton upon the sensible and scientific paper which he has written.

There was one point he brought out—and I venture to say that many of the members in this room overlooked it. It was the subject of bulletins and their great educational power in American life. I dare say that in the United States one might be able to find a bulletin on each and every subject which has a bearing or connection with any endeavor of human energy. The majority of these bulletins contain useful information. Some of them are so ridiculous that they even infringe on burlesque. I have in mind a bulletin written by a crops expert—an agronomist, I believe you call them in agricultural colleges—and for certain reasons which I do not care to divulge, I am not going to say whether this man lived in Iowa, Missouri, or even give a hint as to what state university he is connected with, but nevertheless he makes this statement in a bulletin written on the subject of pastures: "Rye makes a good pasture but is not as permanent in nature as blue grass."

I do not believe there is a ten-year-old imbecile child in the United States today, who was reared on a farm, who does not know that blue grass is a more lasting pasture than rye.

The greatest objection that I have to bulletins is that most of them are too scientific for the layman, and yet not sufficiently so for the veterinarian, and I am somewhat at a loss to know as to just who should read them. Not long ago I read a splendid bulletin on the subject of diseases of hogs, written by a well-informed veterinarian. In this bulletin he enters into a lengthy discourse on the diseases of swine. He goes all the way from indigestion to acute hog cholera. He gives quite a discourse on the "shooting" of serum, and in only one place that I could find in the bulletin is the reader advised to employ a veterinarian, and in that particular place the writer advises the farmer to employ a veterinarian to dissect a botryomycotic tumor from the stern of a hog, which is commonly found following castration. Notwithstanding its defects, it is a good bulletin, but I do not think that the writer of any bulletin on veterinary topics should overlook the fact that the average layman is incapable of making diagnoses and performing operations requiring scientific technic, and the bulletin should frequently stress the fact that the employment of a competent veterinarian is always advisable.

One thing in particular that should be carefully considered by the writer of bulletins is that certain bulletins have no place in the hands of the laity. As an example, there is a bulletin which was written by a member of the Bureau of Animal Industry of the Federal Government. Its title is: "Tuber-

culin Testing of Livestock." This is a wonderful, and a remarkably well written bulletin, and in my opinion should be in the hands of graduate veterinarians only, as I consider that it was the intention of the writers that this bulletin should never fall into the hands of the laity. However, today—and I know whereof I am speaking—different departments of agriculture in the United States are sending that bulletin into the hands of laymen. In my state I frequently get correspondence from vocational agricultural teachers, and they state that they have read Farmers' Bulletin, "So-and-So," and go on and further say: "Please send me a syringe, some tuberculin and instructions regarding the disposal of reacting cattle." It sometimes takes three or four pages to tell these fellows what I mean in three words. (Laughter)

When I first became state veterinarian of Missouri, I wrote one bulletin, and then I quit. It was a bulletin on the subject of stock hogs, and I was told that nothing like it had ever been written before—I mean on that particular subject—and when I read it now I cannot help but hope to the Lord that nothing like it will ever be written again. I will venture to say that when Charles Dickens completed his "Tale of Two Cities" that he was not more self-satisfied with himself as an author than I was when I completed that bulletin. "When it was returned from the printers, my feathers fell the same as a wet peacock when he looks at his feet," and if I had ever been imbued with any idea that somewhere stored away in the confines of my anatomical make-up was the foundation for a future great author, that idea was forever dispelled from my mind.

I am not criticising men connected with the different agricultural and state departments who write bulletins. They possess some good—most of them—but the point which I am trying to stress is that many of them have no business getting into the hands of the laity, as in my opinion they are apt to do more harm than good. You know that when a man thinks he knows a thing and does not he is dangerous, as it is apt to make him self-opinionated and conceited.

The study of any scientific subject is a difficult one to master. During the past year I have engaged in the study of psychology. I studied the subject pretty thoroughly, and all I know about psychology at the present time is that I am supposed to have a mass of nerve tissue attached to the uppermost portion of my spinal column which is commonly known as a brain. Now that is as much as many people know about the subject of hog cholera, even after they have studied such a wonderful book as Doctor Birch's work on hog cholera, and for any man to think, because he has read a little bulletin on the subject of hog cholera, that he knows something of the disease is a mockery and only a jest in the world of veterinary science. As I see the situation, it takes more than an ordinary education to master these things.

When we go to a veterinary college we study a certain amount of pathology, bacteriology, as well as numerous other kinds of ologies, isms, and doctrines. We link them all together into one endless chain of study, and eventually we are handed a piece of parchment paper with the word "diploma" written upon it. Then after we have had a few years experience, if we have diligently applied ourselves in studying wholesome text-books and reading up-to-date journals pertaining to veterinary matters, we sometimes know enough about our business to tell whether a hog has cholera or whether he has eaten too many green apples. In making these remarks I am speaking entirely of the qualified veterinarian, and I am only attempting to prove that if the qualified veterinarian falls down on diagnosis, what can you expect to obtain when you turn a bulletin or a book over to some fellow and let him peruse the pages carefully, and when he gets through he swells up and says, "I know it all."

There is no use of me going deeper into the subject other than I venture the opinion that the members of the A. V. M. A. should take this matter up and put a jack-bridle on some of these gentlemen connected with state departments, who put in their time writing bulletins to send out to the laymen, for, after all, when these bulletins are read by the average layman, all he has to his credit is an imitation of a good old-fashioned Missouri jackass. (Laughter.)

## COMMON DISORDERS OF THE DIGESTIVE TRACT OF SMALL ANIMALS<sup>1</sup>

By W. J. LENTZ, Philadelphia, Pa.

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As it is not within the scope of a paper such as this to enter into exhaustive descriptions of the details of the diseases or to give a complete list of the medicines, doses and treatments that may be used in the case of any given sickness, I have therefore purposely refrained from considering this phase of small animal practice in the usual conventional manner but rather from the standpoint of symptomatology.

### VOMITING

This is a symptom, not a disease, and the causes are many. It should be noted that dogs in particular vomit easily because of the development of their gastric muscles, but they render the effort easier by filling the stomach with air, and so completely fill the organ that its walls can contract on a resisting mass. The most common cause of vomiting is probably lack of proper digestion often resulting in gastro-intestinal irritation or perversion of normal functions; other causes are over-eating, irritation of the mucous membrane by grass, splinters of bone, poisons, from coughing spells, laryngitis, bronchitis, intestinal obstructions, intussusceptions, hernia, early stages of distemper, black tongue, sympathetic irritation from other organs, intestinal parasites, peritonitis, uremia, meningitis, brain affections, etc., in fact any condition which directly or indirectly causes the vomiting center to throw out impulses (centric) or reflexly (peripheral), dependent upon irritation of the nerves of the stomach or elsewhere conveying impulses to the muscles of the stomach.

Disorder of the gastric walls resulting in peripheral vomiting may be due either to a hyperexcitability or a depressed condition of the mucous membrane and its nerves.

When due to a hyperexcitability of the gastric mucous membrane, as shown by the fact that even small amounts of food or medicine, when swallowed, are at once ejected, local anesthetics and depressants—that is, gastric sedatives—are needed. Drop doses, frequently repeated, of either chloretone, cocaine, aconite, iodin, phenol, creosote, chloroform or dilute hydrocyanic acid

<sup>1</sup>Presented at the sixty-first annual meeting of the American Veterinary Medical Association, Des Moines, Iowa, August 19-22, 1924.

are of value. Chloretone and cocaine should preferably be given in capsule, so as to exert full effect on the stomach, rather than on the mouth and esophagus. Bismuth is indicated as a coating to the walls of the stomach, protecting and soothing them; therefore bismuth may be advantageously used as an adjuvant and if, owing to active fermentation, the vomiting is excessive, bismuth combined with such a local anesthetic and antiseptic as creosote or phenol is very effective.

In dealing with cases of vomiting due to debility of the stomach and a depressed condition of its nerves, gastric and often systemic stimulants are needed. As a gastric stimulant, ipecac, although regarded as a useful drug to produce emesis, nevertheless in exceedingly small, frequently repeated dosage (wine of ipecac, one drop, powdered ipecac one-eighth grain, every hour), is of value because it irritates the stomach sufficiently to restore its normal tone. In some cases tincture of nux vomica or Fowler's solution of arsenic in half-minim doses is useful.

I would particularly call attention to the beneficial effect of hydrochloric acid in large doses in those cases in which the owner gives a history somewhat as follows: The animal vomits so frequently and the act occurs so suddenly, one to three hours after feeding, that it makes a general nuisance of itself. Dilute hydrochloric acid, drams two; essence of pepsin, ounce one; q. s. ad compound tincture of gentian, ounces four; one to two teaspoonfuls in water; will be found a useful prescription.

There is unquestionably, in many such cases, a diminished secretion of hydrochloric acid, due to an atrophy of the gastric tubules as shown by the fact that the food vomited, even after several hours, may have only a faintly acid odor or none whatever. In ordinary catarrh of the stomach this prescription is often of equal value.

The food given in cases of vomiting may consist of barley or oatmeal water, peptonized milk, milk with at least two or three tablespoonfuls of lime water in each saucer, and it is by far better to give one to two teaspoonfuls every half-hour than to attempt to make the animal take larger amounts which it frequently vomits. When, however, even small amounts of the liquid diet are not retained, rectal feeding must be resorted to to sustain strength.

#### DIARRHEA

This is likewise but a symptom, not a disease, but its meaning—"to run through"—adequately expresses the state it represents

and is referable to all forms of intestinal disturbance accompanied by the passage of liquid stools. In some cases the laxity is due to catarrh, acute or chronic, of the intestinal mucous membrane, in which the passages contain large amounts of mucus (mucous diarrhea); in some to a faulty nervous control in consequence of which the blood vessels of the intestine lose a large amount of liquid (serous diarrhea); other types of cases are those in which the food is improperly digested because of a disordered condition of the digestive glands (greenish or clay-colored, gaseous diarrhea); still another type is that in which ulceration brings about irritation and bloody purging (hemorrhagic diarrhea).

The catarrhal type may be treated with a dose of castor oil or magnesium sulphate, to get rid of the mucus and fermenting food. It will often be found necessary, particularly if, as is often the case, atony of the bowel is present, that a nitrate of silver and hyoscyamus pill, or one containing acetate of lead and extract of opium, be given.

In those cases of serous diarrhea the blood vessels are relaxed and dilated as a result of disordered innervation and the causes operating are many, such as fear, shock, from exposure to cold or from exhaustion, infectious diseases (distemper), etc.

A shattered condition of the nervous system, affecting in particular the splanchnic nerves, causes diarrhea in that these nerves are the control to peristaltic action in addition to controlling the calibre of the intestinal blood vessels. Therefore such drugs as opium in particular, which is a stimulant to the splanchnic nerve, are indicated. Small doses of oil of cloves and cinnamon and chloroform or camphor are likewise of value because of a similar influence. As there is relaxation, an astringent such as aromatic sulphuric acid does good. In those cases in which the diarrhea is due to a deficiency of the digestive juices, dilute hydrochloric acid and pepsin is sometimes of value, sometimes podophyllin, one-sixtieth grain, powdered ipecac, one-eighth grain, three times a day, is indicated and in those cases in which rickets is in evidence, sodium phosphate, lime salts and table salt should be administered.

In that type in which the diarrhea is slimy and often bloody (dysentery) the causes may be pathogenic microorganisms (canine typhus, distemper, septicemia, etc.), hookworm infestation, coccidiosis, exposure to heat or cold, improper food, impure water.

One must study the cause carefully as the following remedies

are useful in some cases while in others they are of no avail: In the last few years cultures of *Bacillus bulgaricus* and *Bacillus acidophilus* have been employed with the idea of inhibiting the growth of pathogenic and putrefactive intestinal organisms. Intestinal antiseptics and sedatives are indicated in the majority of bowel disorders, nevertheless it is doubtful if true intestinal antisepsis can be brought about with drugs within normal physiological limits. In excess they would probably destroy useful, benign organisms, as well as those which are malignant. Salol, naphthalene, salicylic acid, phenolsulphonates, phenol, or arsenite of copper may be employed for this purpose. If the passages are slimy and bloody any of the following are indicated: A saturated solution of magnesium sulphate, five to ten minims of sulphuric acid, calomel (contra-indicated if much weakness is present), emetin hydrochlorid, one-sixtieth grain, drop doses of turpentine with bismuth, bichloride of mercury 1/250th of a grain.

Ulceration of the lower bowel, often made manifest by the passage of bright red blood with the feces, calls for rectal injections of nitrate of silver solutions, ten grains to the pint of water, to be followed immediately by a salt solution; or a solution of fifteen grains of phenolsulphonate of zinc to the quart of warm water, or tannic acid, which is also an intestinal antiseptic, employed in the strength of one dram to one pint of water. Ulceration of the upper bowel may exhibit itself as a chronic diarrhea with dark-colored, degenerated blood (tar-like feces) and may be treated with a nitrate of silver pill containing hyoscyamus and opium, which should be coated preferably with phenyl salicylate so that it will pass through the stomach before being dissolved. A chronic catarrhal diarrhea, which may be due to a number of causes, as irregular diet, cold, or some infectious disease as distemper, canine typhus, septicemia, worms, etc., may respond to such remedies as chlorid of ammonia or potassium iodid when others fail.

In the treatment of all forms of diarrhea it is important to regulate the diet. Milk by itself is sometimes contra-indicated in acute inflammatory conditions of the gastro-intestinal mucosa, because of the development of nitrogenous acids (oxybutyric, butyric, etc.), therefore should be boiled with starch, barley water, strained oatmeal gruel, or should be peptonized, or in combination with large amounts of lime water.

It should always be borne in mind that in such infectious diseases as distemper, canine typhus, septicemia, etc., if the

diarrhea is moderate it should never be checked, because the bowels are important channels by means of which toxins of bacteria or poisonous albuminoids are eliminated from the body.

#### CONSTIPATION, OBSTIPATION

In carnivorous animals there is a natural tendency to simple constipation, the evacuations being normally dry and solid and attended with more or less straining, the passage of the dry feces being facilitated by the secretion (oily) from the anal glands. The common practice, therefore, because of inference drawn from the human family, of administering drugs to overcome this condition, in many instances is not only a mistake but harmful, as it should be borne in mind that defecation is a normal physiological act which must be continued all through life and it is almost as foolish to stimulate the bowel continuously to peristalsis as to employ heart stimulants perpetually. On the other hand obstipation, or the accumulation of feces in the intestine, is common and of course often requires treatment. Such a condition may be caused by hard bodies such as pieces of bone, pebbles, fruit stones, grass, hairs, sand, earth, etc. A common cause is an exclusive diet of vegetables, bread, dog biscuit, bones. Other causes are confinement and denial of exercise or fear of the breach of cleanly habits (house dogs), atony of the bowel (old animals). It is sometimes dependent upon deficient nerve supply or muscular weakness and lack of secretion in the lower bowel or upon hepatic torpor, the bile being an intestinal stimulant, antiseptic, and promoter of secretion.

The disorder may occur secondarily in consequence of inflammation of the anal pouches, painful condition of the abdominal muscles, prostatitis, stenosis, intussusception of the intestine, etc.

The ordinary case of constipation may be overcome simply by providing daily exercise and by judicious feeding. An occasional feed of oatmeal gruel with milk and green vegetables will be found beneficial. All food containing flour (bread, dog biscuits), potatoes, or starchy vegetables is to be avoided. When the impaction is of more than a couple of days' standing then we should resort first of all to warm, soapy water and oil enemata, frequently administered, preferably with a gravity syringe not held too high. Sometimes it is necessary to use instruments to break down a fecal mass.

The frequent use of purgatives has a tendency to produce rather than to remove constipation. Mineral oil is useful in that

there is no tendency in this direction. Milk of magnesia and Epsom salt are often of value, depending on the cause. Of the many drugs employed as laxatives none compares with cascara sagrada, which not only moves the bowels but at the same time tends to make future passages easier and more regular. In old dogs tympanites is often associated with constipation and a little asafetida or capsicum may be beneficially added to whatever laxative is employed.

#### INTESTINAL TOXEMIA, INTESTINAL INTOXICATION

As a discussion bearing on intestinal toxemias would necessarily be too detailed in a paper of this character, therefore we will confine ourselves to a few general remarks.

Bacterial intestinal toxemias may be divided into two types: (1) putrefactive toxemia and (2) pyogenic infection toxemia. They may occur singly, but a coincidence of the two types is not at all uncommon.

In the dog in particular, because of the incompetency of the ileo-cecal valve, permitting of regurgitation of cecal contents into the ileum, the putrefactive type is common. For this reason I believe that the pyogenic infection type in the dog is rarely found to exist alone.

In the putrefactive type great numbers of bacteria are being constantly thrown into the lower part of the ileum from the cecum and the colon bacilli find a fertile field (relatively carbohydrate-free) for their growth. Putrefactive products are thus formed in a portion of the small intestine where absorption is rapid.

By the pyogenic infection toxemias we mean those due to pyogenic cocci which occur in the lymph follicles, Peyer's patches, lymph glands of the intestine and mesentery, and the intestinal mucous membrane.

It is obvious that the symptoms of intestinal toxemia are necessarily complex and that, clinically, intestinal infections produce a multitude of disorders and diseases. Some of the most common types of diseases associated with infections of the digestive tract are: Diseases of the blood vascular system; rheumatism; some forms of eczema; some forms of asthma; malnutrition; protracted convalescence; various indefinite digestive disorders, etc.

The treatment of intestinal toxemias calls for, first and foremost, the mechanical drainage of the colon, thus hastening the

activities of the functions of the small intestine and thus indirectly bringing about a flow of bile which is antiseptic. The rectal injection should preferably be a normal saline solution because, under the law of osmosis, we would thus be fortified against the extraction of vital salts from the cells of the tissues.

As there is a marked difference between functional disturbance of the digestive tract and organic disease of the same, the associated treatments vary. Theoretically the implantation, via the rectum and the mouth, of the "protective forms of bacteria" (so-called) seems indicated. My results with the *Bacillus bulgaricus* have been disappointing, however. Whey or broth cultures of the *Bacillus acidophilus* have, on the other hand, in some instances been apparently beneficial. Intestinal antiseptics, likewise, seem to be indicated but, as pointed out previously, cannot be given in sufficient dosage to be effective.

The diet is a very important factor and should consist of liquid or semi-solid, easily digested foods in small amounts but frequently administered. Generally speaking systemic tonics are of value. It is obvious that no blanket rules can be laid down, individual cases may require digestive juice substitutes, antacids, intestinal antispasmodics, gastric sedatives, laxatives, etc.

In some cases of acute gastro-enteric intoxication, due to irritation of the bowel by the toxic products of undigested food, decomposition and the absorption of the poisonous ptomaines, or in those cases in which for some reason digestion is retarded or arrested, some very alarming symptoms, such as nervous depression, convulsions (often rabiform in character), high fever, etc., may be present, no doubt due to the fact that the whole system becomes affected by the absorption of the toxic products, often culminating in exhaustion and collapse unless prompt treatment be administered.

The dyspnoea sometimes present may suggest heart lesions and asthma.

Epileptoid seizures and, I believe, some forms of chorea are caused by intestinal indigestion.

In urgent cases treatment resolves itself to a prompt evacuation of both stomach and bowels. As an emetic a small hypodermic dose of apomorphin is effective. Lavage of the intestines and stomach, with a normal saline solution, permitting a rectal injection to pass the entire length of the alimentary tract and then through the mouth, is fairly well borne by the dog, not well by the cat, but is contra-indicated if much weakness is present.

Sometimes a prompt, non-irritating purgative, such as castor oil or magnesia, will suffice to eliminate the irritating toxic products.

Other considerations are: The giving of the bowel an opportunity to recover tone and the re-establishing of the animal's strength.

#### COLIC (ENTERALGIA)

Intestinal colic, of course solely a symptom, does not occur with that frequency which might be expected when we consider to what extent owners indulge their pets. It is manifested by paroxysmal pain, located in the bowel and without evidence of inflammation. Worms, of course, are perhaps the most common cause; other causes being intestinal obstruction, intussusception, hernia, impaction of feces, and cold, indigestible food. Colic will frequently result when there is a general loss of tone on the part of the muscular layers in the walls of the intestine. The treatment is simple when the cause is known and the following remedies have been found of value in many instances: Essence of peppermint, asafetida, milk of magnesia, aromatic spirits of ammonia, sodium bicarbonate. A useful combination now on the market is extract of cannabis, extract of hyoscyamus, oleoresin capsicum and oil of peppermint. When pain is severe it is sometimes necessary to resort to hypodermics of morphin. Belladonna is a useful antispasmodic. Benzyl benzoate has, in my hands, been less constant in its control of intestinal spasm than I hoped for from the reports on this drug when first brought forward.

#### CONVULSION (FITS), DELIRIUM

Limiting the cause of such nervous conditions as convulsions and delirium to some morbid state of the digestive tract, we will now consider these symptoms from a clinical standpoint as separate affections, but the treatment should not only be directed toward a control of such nervous manifestations but to a removal of the cause as well.

Some of the exciting causes are worms, dentition, suppression of natural evacuations, over-exertion after feeding, catarrh of the stomach or bowel, intestinal spasm, gastro-intestinal irritation, intestinal toxemias, dysentery, etc.

The momentary treatment is entirely symptomatic, for example: In many instances such prodromal conditions as twitch-

ing and restlessness may simply call for the administration of an enema.

The same procedure may be indicated in a case of active delirium, associated with high temperature, and due to intestinal toxemia. Intestinal and stomach washings are sometimes indicated before control by drugs is attempted, whereas, in some cases of delirium, associated with excessive weakness or collapse, active stimulation by drugs is indicated in advance of other therapeutic measures, while, in others, to guard against the animal doing itself injury or to prevent exhaustion and collapse, nerve sedatives are first called for.

The symptomatic management of all nervous manifestations, having their origin in the digestive tract, may embrace, in addition to certain indicated drugs, some such therapeutic measures as

(1) *Stomach washing:* The most convenient way of washing the stomach of the dog or cat is to place the animal on the table, resting on its sternum, front paws extended. The apparatus consists of a soft, flexible rubber stomach-tube, about two feet in length, a funnel attached to one end of the tube, a piece of board, to be used as a speculum, with a hole of slightly larger diameter than that of the tube. After the fixation of the speculum between the jaws, the tube is passed through the hole in the same, down into the esophagus and stomach. The funnel is elevated and the solution, either saline or bicarbonate of soda, is poured through the tube into the stomach and then, by lowering the funnel from time to time, the contents of the stomach may be siphoned off.

(2) *Enteroclysis, or low and high enemata:* Flushing the colon may be accomplished by means of a soft rectal tube and funnel, and in the manner as previously described with stomach washing the colon may be washed free of its contents. The solutions used may be normal saline, medicated waters such as bicarbonate of soda, etc., and starch water. Sometimes it is necessary to require the solution to pass forward beyond the ileo-cecal valve and thence through the intestines, stomach, esophagus and out of the mouth. The apparatus used will then have to consist of a long colon-tube and a gravity or fountain syringe, the animal being held up by its hind legs, the abdomen being gently palpated from time to time.

Some of the drugs frequently required are: Apomorphin, a rapidly acting emetic, hypodermically administered in doses from one-twentieth to one-fifth of a grain; areocolin hydrobromid, where it is desired quickly to unload the bowels, in dosage from

one-twentieth to one-half grain; sodium bromid, from one to ten grains, as a nerve sedative, frequently administered. Sodium bromid, five grains, chloral hydrate, two grains, starch water, one tablespoonful, slowly injected into the rectum every hour until convulsions cease, often acts beneficially in young animals.

Morphin sulphate is only exceptionally indicated (pain) in the majority of instances, being of little value as a cerebral sedative unless given in very large doses—from one to three grains—resulting sometimes in an acute poisoning, many symptoms resembling those of congestion of the brain, and it is a well established fact that in the dog and cat it increases the reflexes generally.

Barbitol, formerly known as veronal, in from one- to five-grain dosage, is a very useful antispasmodic and sleep producer, but in overdose or too frequently repeated is decidedly harmful.

Luminal and luminal sodium are powerful anticonvulsants, in dosage ranging from one-half to five grains. Luminal sodium, being freely soluble in water, lends itself readily to hypodermic medication. Atropin, in dosage from  $1/200$  to  $1/80$  of a grain, is sometimes a very useful antispasmodic and in some spastic conditions of the intestine is the only drug which will give relief.

In obstinate and prolonged convulsive seizures the inhalation of chloroform is justified. In pyogenic infection toxemia the convulsions may be due to heart failure, in which case camphor, strychnin, digitalis, or alcohol, may be given subcutaneously.

Nervous symptoms, due to worms, varying in degree from moaning, restless sleep or muscular twitching to delirium and convulsions, are first to be controlled by the aforementioned therapeutic procedures after which vermifuges are administered.

In conclusion I might say that this paper would be incomplete without a consideration of the very important subject of helminthiasis. A discussion relative thereto would not only be too lengthy but unnecessary, in view of the fact that published monographs by investigators along this line, who have brought the subject rather up to date, are available.

#### DISCUSSION

**DR. J. C. FLYNN:** We have listened to a paper that I consider a valuable contribution to this subject and I do not wish to offer any criticism. I think the subject was amply covered. It gave you a line of medication for each symptom presented and the author did not leave very much room for discussion.

However, I think it would possibly be in order to give you a little of my own experience along the line of handling intestinal troubles in small animals. I

believe there is nothing that contributes more to the high mortality of the small animal than intestinal disturbances. We have them in possibly two-thirds or more of the diseases of the small animals—in distemper, in intestinal parasitisms, in constipation and even in nervous diseases such as rabies, we will have an intestinal disturbance.

In his paper Dr. Lentz referred to the use of *Bacillus acidophilus* and of *Bacillus bulgaricus*, and his experience, as outlined, is right in line with my own. I have found very little benefit, so far as I could see, from the use of *Bacillus bulgaricus*, but in the use of *Bacillus acidophilus* I have been able to correct some very bad cases of chronic intestinal irritation. I recall in particular the case of a little Spitz; this animal was about three years old and almost its entire life it had been troubled, more or less, with indigestion and constipation. We tried a number of different methods of handling this case and we never got very far with it—only temporarily—until we put the animal on *Bacillus acidophilus*. This is handled, for the benefit of you who have not had experience with it, or have never attempted to use it, by placing a dram in a pint of milk and putting that milk out in the sunshine, where it can sour, and after about twelve hours put the milk back on ice and give it cold; give it in small amounts—say two or three tablespoonsful at a time—to animals that vomit, and they are more likely to retain it than they are if you give it in too large a quantity—say a pint at a time.

Another point mentioned were severe cases of constipation. I prefer to handle those cases mechanically, if I can. Usually the anterior portion of the bowels is in very good condition, unless the obstruction has been there long enough to set up quite an irritation. You will find that old dogs, that have been improperly fed and improperly exercised, develop a chronic constipation and it is necessary for them to be brought to the hospital at frequent intervals to be taken care of. For relief of that condition I like to use small obstetrical forceps. Dip them in oil—castor oil, mineral oil or vaseline—and take the abdomen in the hand. (I catch the abdomen in my hand if it is an animal that I can and use my shoulder against the top of the back, up in the lumbar region.) Catch the obstruction in the hand, reach in with your obstetrical forceps and take it out, a small piece at a time. Usually you can insert the instrument and catch those large, hard masses and remove them by careful traction without injuring the animal; you will find in severe cases, where the obstruction has been there for a good while, that there may be some irritation and you may get a little hemorrhage following.

I like to follow the removal of the obstruction with injections of warm olive oil—an ounce or two ounces of warm olive oil.

I like sodium bicarbonate in intestinal irritations; I use a great deal of it; I use sodium bicarbonate in giving anthelmintics; it aids, in the peristaltic action, to remove intestinal parasites and it hurries it up, you get better action, and another thing that it will do for you in cases of bad, foul-smelling diarrhea, where they pass a good deal of slime and mucus, where it is highly acid and it burns the posterior part of the animal around the perineal region, around the anus and close up under the tail, you find they are getting raw from the bowel passage, the injection of sodium bicarbonate will relieve that condition a great deal.

Then there is another condition you possibly have witnessed—torticollis, or wry-neck. They will bring a dog in to us whose head is turned to one side, the pupils of the eyes are dilated and some of them are so bad that if you put them down they will flop over and always lie on one side. I have always attributed that to toxic absorption and nearly always find that there is a long standing case of chronic diarrhea. I have taken those cases, and, by giving sodium bicarbonate and also by giving enemas of sodium bicarbonate, have been able to bring those animals to complete recovery. You know that this is a condition that has frequently been considered as incurable, or practically so. Many of them do not get well.

I was in St. Paul, at a state meeting a few days ago, and they held a post-mortem on a little Boston terrier that was infested with *uncinaria*—hook-worms; that little animal's bowels were absolutely coated with blood, and there were ulcers. I do not know whether you have held postmortems on dogs that

have this severe intestinal irritation from uncinaria, but if you take the small intestine and hold it up in your hand and run it along over your hand you will find, just under the serous coat, occasionally, little spots that look like—the best way I can describe it to you is to say that it feels like No. 6 shot, just under the serous coat. It is a little blister-like spot. On the other side of that is an ulcer—on the mucous membrane side—and when you see those little dark spots, like little blisters, you can put it down that you will find the uncinaria. That has been my experience. They cause a great deal of irritation there and that irritation produces so severe a hemorrhage that the animal dies. This dog had bled severely, had vomited blood and passed blood.

Milk of magnesia was recommended here. We know that milk of magnesia is a laxative in itself and the principal benefit that we derive from the use of milk of magnesia in this irritated bowel condition, where there is already a diarrhea present, would be the antacid effect of it, and to get the proper action which you would desire from this agent, it would be necessary to give it in small doses; if you give it in large doses it would increase the diarrhea.

There is one condition that was not mentioned in this paper and I am going to recite it here, not that I can give any particular reason for the cause of this trouble, but we get it frequently in old dogs. A dog will be brought in with a history that it has been vomiting and that it is quite weak and is refusing food. (I do not recall ever having seen this in a young dog; it is always in old dogs.) There is a peculiar odor to the breath, a sweetish sour odor, if you can understand what that is, and it is peculiar to this disease, and after a short time you will notice the temporal muscles contract or jerk, and the teeth will pop together, and there is extreme exhaustion, the animal does not want to get on its feet and it will drink considerable water and it will vomit almost immediately. Later on in the disease there is a bloody diarrhea. Those dogs die. I have never found anything that would relieve that condition or would save the animal.

I have held postmortems on many of those cases. I have had laboratory examinations made of every section and portion of the bowel. We have had tests made of the saliva, of the fecal matter, of the urine, and we have never been able to find out the cause of this trouble.

I am just mentioning this trouble because I am at sea myself, as to what the cause is or how to take care of it. Possibly some of you may be able to throw some light on it.

I believe that is all I care to say on this paper, but I want to congratulate the Association on selecting Dr. Lentz to present a paper along this line. It is covering one of the important phases of small animal diseases.

DR. J. A. ALLEN: I wish to offer further tribute to the paper presented by Dr. Lentz. I have heard a good many papers on small animal practice and I think this is the best presentation of the subject that I have yet heard.

I just rise to my feet to ask Dr. Flynn whether, in the cases of the wry-neck dogs described, in which the head was twisted, he was not able to demonstrate the presence of otitis, and whether in such cases he could not further demonstrate the presence of the ear mite.

DR. FLYNN: Do you mean the parasitic ear canker? That produces a different symptom from the one I described. In the one that I described the animal carries its head to one side and it will hold its head that way regardless of what you do to it, and when you put it down on its feet, if it is far enough advanced with this trouble, it will turn completely over.

With the parasitic form of ear canker they walk in a circle a great deal and hold the head to one side and they shake the head a great deal. The condition I spoke of followed distemper and it had a chronic diarrhea for a long time.

I know the condition that you have reference to and I would say that it is produced by ear canker. It is an inflammation that extends into the brain coverings and causes fits or convulsions. It is one of the active causes of fits in young cats, but I find many cases of wry neck that are not due to parasitic invasion of the ears.

DR. E. L. QUITMAN: There are just a couple of points that I wish to add to Dr. Lentz' most excellent paper. Dr. Lentz' paper showed, of course, the most careful preparation and deep thought and clear conclusions, clear deduc-

tions, and, like Dr. Flynn, I have to say that there isn't a whole lot that can be added to it, except, perhaps, to differ with him a little bit on some methods.

In the treatment of vomiting he did not stress—at least, if he did, I did not hear it—the necessity of keeping water and other liquids away from the patient—that is, in persistent vomiting cases—for a period varying from eight to twelve hours commonly, and sometimes for a period of twenty-four hours. There are some cases of vomiting in which this is absolutely essential, absolutely necessary, before the vomiting can be controlled by any method.

Therapeutically, a favorite prescription of mine, and one that I have used for thirty years or more, is composed of quarter-minim doses of phenol, with about seven and one-half minims of paregoric, simply enough to act as a local gastric sedative, and about seven and one-half to ten grains of bismuth sub-nitrate, and glycerin sufficient to aid in suspension after shaking the mixture. I usually use cinnamon water as a flavor. But that is a point I wish to stress—the necessity of keeping away water and all other liquids, for a period of usually eight to twelve hours and sometimes even for twenty-four hours.

Another point that comes to my mind, wherein I differ from Dr. Lentz, is the administration of a gastro-intestinal douche, that is, washing the gastro-intestinal tract, through the anus forward, so that the water or normal saline solution, or perhaps even a soap solution, which should be followed by either clear water or normal salt solution. He says that the animal should be held up behind. I want to suggest to Dr. Lentz that that is not at all necessary, and what is more, in the case of a weakened patient, holding him up behind and giving a gastro-intestinal douche is apt to cause collapse. I once did that, but we have stopped it. I now prefer running the solution, whatever it may be, from a bucket, by means of a large bulb-syringe, just a large bulb with the rubber tubing at each end retained in the bucket by means of a coil spring affair, and on the end of the tube I have a pear-shaped, aluminum, rectal injector. This enables one to wash out the bowels first, allow some water to enter the intestines, allow the patient to eject it, aiding him perhaps by abdominal pressure, and after the posterior portion of the intestines is emptied, then a few more presses of the bulb will cause the solution to go through the patient. We find that it takes less water and less filling of the patient, causes far less distress, and that the ejection from the mouth comes much more quickly when a slight pressure of the bulb is used rather than from the fountain syringe or the irrigator.

Another point that occurs to me is that Dr. Lentz made reference to treating fits from the gastro-intestinal standpoint. I want to stress a point there that he indicated and that is particularly in the furious convulsions, hysteria or what is termed "running sickness," the gastro-intestinal douche frequently and in fact usually overcomes the condition with one treatment, and very nicely. In the absence of the use of a gastro-intestinal douche in that case, an active dose of arecolin by the mouth will usually quiet the animal nicely, whether it be due to worms or other obstructive or irritative material in the gastro-intestinal tract.

In the treatment of persistent diarrheas, the subject was covered very nicely but in the mention of drugs and therapeutic suggestions, one very valuable drug in persistent diarrheas and even in the hemorrhagic diarrheas was not mentioned, and that is arsenite of copper. I want to tell you that if arsenite of copper is given in doses according to the size of the patient, of from one five-hundredths of one grain to one one-hundredth of one grain, at intervals of either every one, two or three hours, in acute diarrhea, or three or four times daily in the chronic type, it will give most excellent results. I would suggest to those of you who have not added copper arsenite to your list of therapeutic measures in canine practice that you bear it in mind.

The main object I had in getting on my feet was really to warn you that, in giving the gastro-intestinal douche, not to suspend your patient or not to elevate the hind quarters completely but to allow them to stand on all four legs or hopple them in the sterno-abdominal position.

Now there is a little suggestion that comes to my mind in connection with the canine douche and that is that occasionally you feel it essential, in order to save the patient's life, that he must be washed through thoroughly. Occa-

sionally you will meet a dog that is bound not to let the fluid come from his mouth. I dare say that Dr. Lentz and Dr. Flynn have had such animals. They hold it, set their jaws firmly, make swallowing efforts and do everything but let it come out of the mouth. Give that fellow a medicinal dose of apomorphin—a twentieth to a tenth of a grain—and he will be unable to prevent the fluid from being ejected from the mouth. (Applause)

DR. F. PERRIN: I would like to ask Dr. Flynn if he makes any distinction between the condition that he speaks of, in the old dogs, and canine typhus.

DR. FLYNN: There is quite a marked difference between this trouble and canine typhus, although they do resemble each other to some extent. In those cases I have never witnessed the extreme ulceration of the mouth that you get in canine typhus. I think canine typhus and black tongue, or sore mouth, are one and the same thing.

### FOOT AND MOUTH DISEASE

No new cases of foot and mouth disease have been found in the Southeast Texas area since October 27, and the chances that further infection will be found are very remote. The vigilance of the state and federal authorities, however, is not being let down, and it is sincerely hoped that all business interrupted by the appearance of this disease will soon be on a normal basis.

Since the ailment of the cattle on the Jacobs ranch was definitely diagnosed as foot-and-mouth disease on September 27 to the present time, a great work has been done for the live stock industry of Texas and the states who draw their feeder supply from Texas. Working in complete harmony, without political influence or special privileges from within or without, dealing as firmly with the hundreds of cattle of one man as with the milk cow of a big farmer, the Live Stock Sanitary Commission and the Bureau of Animal Industry are certainly to be praised for a great work well accomplished, and the commission has more than justified its existence as a separate branch of the state government.

It is not known, and may never be definitely known, how the infection was carried to this territory. That is not the great problem, except in what bearing it might have on the same carrier of future infection. The disease was there and had to be checked and completely eradicated, or the entire commerce of Texas would be prevented entry into other states and countries, and irreparable damage done our breeding and beef herds.

It is hoped that the remaining chapters will be confined to "paying the bill." The slaughtered cattle were appraised by competent men, and the incoming Legislature will be asked to make an appropriation to pay one-half of this amount for the state of Texas while the federal government will pay the other half.—*The Cattleman.*

## EDEMA OF THE WATTLES IN COCKERELS

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Edema of the wattles is not a new disease in this country, sporadic cases having occurred in the past in various states. Upon searching the literature, however, we failed to find any report of it having occurred to any serious degree in the United States.

The following remarks are the result of conditions observed during a study of the disease in California, and may, of course, apply only to sections where the poultry industry is conducted in a manner similar to that found in this state.

The first cases of any serious importance which were reported occurred in one flock in 1920. In 1921 the disease was reported in eight breeding flocks, in 1922 in sixteen breeding flocks and the past winter (1923-1924) the disease was reported in 34 breeding flocks. These flocks had a total of 2000 male birds and approximately forty per cent of this number were affected. During the past four years the occurrence of this disease in California has increased in frequency until now it is a problem of considerable economic importance to the owners of breeding flocks.

### OCCURRENCE

The disease has been observed in range flocks as well as flocks confined to houses and yards. The disease affects both sexes, but it appears that it is primarily a disease of males. It has been observed in mature males, mature females and in cockerels as young as four and one-half months of age. It has not been observed in pullets of this age, probably because of the slight development of the wattle which would lessen the opportunity for the infection to enter.

### ETIOLOGY

Sedden observed this disease in Australia and he stated that in all acute cases it was possible to isolate a short rod indistinguishable from the one causing fowl cholera.

Carpenter (California) isolated *Bact. avisepticum* from edematous wattles of a cockerel and a hen. The cockerel died but the

hen appeared otherwise normal and recovered. Cultures of both strains, when injected into the wattles of four normal cockerels, produced an edematous swelling in eighteen hours and death in four to six days. *Bact. avisepticum* was recovered from the wattles, heart, liver, and spleen of all birds.

Cultures of three other strains of *Bact. avisepticum*, isolated from hens with ruptured yolk, when injected into the wattles of normal cockerels, produced edema of the wattles and death in two to six days. *Bact. avisepticum* was recovered in all cases.

Cultures of eight other strains of *Bact. avisepticum*, isolated from hens with ruptured yolk, failed to produce either edema of the wattles or death when injected into the wattles or subcutaneously.

In other naturally occurring cases of edema of the wattles, *B. coli*, *B. pyocyanus* and *Staphylococcus albus* (three strains) have been isolated. The injection of cultures of these organisms into the wattles of normal cockerels gave negative results.

During the past year several strains of *B. coli* and staphylococci were isolated in addition to nine strains of an unidentified rod. Cultures of these strains, when injected in amounts of 0.1 cc into the wattles of cockerels, produced edema, and from the lesions produced the same organism was recovered. At the present time, however, we are not in a position to make any statements regarding the etiological factor of this disease.

#### ARTIFICIAL INFECTION

In artificially infected cases, the swollen area of the wattle contains a cloudy, foul-smelling fluid twenty-four hours after inoculation with 0.1 cc of the infective material, and the course of the disease is very similar to that observed in natural infection. Some of the swellings produced artificially were generalized throughout the wattle and were approximately one-fourth inch in thickness, instead of being localized in one area as is generally found in cases of natural infection. The recovery of these birds was marked by the same shriveling of the wattle as marks the recovery of birds infected by natural means.

#### NATURAL INFECTION

In natural infection, the first symptom to appear is an edematous swelling of one or both wattles. The majority of the cases, however, are unilateral. The birds become listless, show a loss of appetite and a generalized depression. Some swellings do not

exceed the size of a small marble, while in other cases the wattle becomes enormously distended and in a few cases rupture of the wattle occurs. The swelling generally appears in the central portion or in the ventral third of the wattle. It gradually increases in size and tends to progress upward until in some cases it extends into the opposite wattle or into the sinuses of the head. It is the latter cases which most commonly terminate fatally. In typical cases, about the third day, the material contained in the swelling begins to thicken and assumes a cloudy yellowish color, resembling somewhat the color of meat extract agar. This material continues to thicken and about the sixth or seventh day becomes a caseated mass. After the material becomes caseated it can be entirely removed in one mass by incising the wattle. The caseated mass does not show a tendency to adhere to the tissue surrounding it. In those cases in which the caseous material is not removed, the diseased wattle begins to shrivel shortly after the fluid which is contained solidifies. This shriveling continues until the affected wattle, in recovered birds, appears as a hard, wrinkled mass, from one-half to one-third the original size of the normal wattle. In the latter stages a scab may be seen on some portion of the wattle which is probably the result of pressure necrosis of the skin. The course of this disease, from the appearance of the first symptom until recovery, so far as sickness is concerned, is, as a rule, not longer than two or three weeks.

#### MORTALITY

The mortality of this disease in the cases observed and in those reported in California is not high. Therefore, deaths due to this infection alone do not cause breeders a great amount of loss. When males become affected, however, they show inappetance and droopiness, and it is in this depressed state that they are the object of attack for the healthy males of the flock. A high percentage of the birds so attacked are destroyed. Those which are not actually killed by other males are nearly always "broken down," injured, so that they will never be useful for breeding purposes, and for economic reasons are destroyed by the owner. This is the principal reason why breeders are concerned regarding this disease; it is not because of its primary but rather because of its secondary effects. If droopiness resulting from this disease can be prevented, these attacks will not occur and, to an appreciable extent, "mob violence" by healthy male birds in the flock

will be checked. Because of the lack of aggressiveness of females the above condition does not occur in hens and for this reason, it is believed that this disease is, from an economic standpoint, primarily a disease of males. In certain districts in California breeding flocks are kept under range conditions, so one can readily see that in a flock of 3000 hens and approximately 300 cockerels there is danger of breeders experiencing considerable loss due to the above condition. Many of these breeding males are pedigreed on one side and some of them on both sides, and they are valued at from five to forty or more dollars.

#### CONTROL

Some ranchers report that the disease has been fairly well controlled by the use of certain disinfectants in the drinking



FIG. 1. Before cropping.

water. The most common remedy used is copper sulphate (one tablespoon of a saturated solution to five gallons of water). Some give this for three consecutive days, discontinue for two days, and then repeat for three days. Others keep this solution before the birds continuously. In all cases where this method has been reported as successful in holding down the infection, the treatment has been given the birds throughout the breeding season.

The impossibility of accurately checking these reports, such as the ones outlined above, makes one somewhat doubtful as to whether such treatment is as efficient as some laymen think it to be.

The facts that it appears to be an external wound infection, that the wattles are submerged while birds, particularly males, are drinking, and that the wattles of males do come in contact with the soil while the birds are feeding from the ground, suggested that the safest method of control was that of cropping the wattles of all males in infected flocks.

The idea of cropping is not at all a new one but it was necessary, owing to the large number of birds to be treated, that the technic be improved from the standpoint of reducing to a minimum the time required to remove the wattles and for the absolute control of hemorrhage. Under California conditions, at least, it is impossible to isolate these birds until the wounds have healed, and this, along with the fact that the birds fight continually, makes it necessary that hemorrhage be absolutely controlled. In the past ranchers have practiced cropping, but their methods were crude and often unsatisfactory. Because of this it was agreed that a practical method of cropping should be developed and it was this idea which prompted the following work.

The ranchers' method of performing this operation was, by means of a sharp knife, to cut off the wattles as close to the lower mandible as possible. Some treated the wound with tincture of iron chlorid, which was of some value in controlling hemorrhage, but even then in most cases hemorrhage was quite severe. In some cases, no hemostat was used and, of course, some birds showing a pronounced development of the wattles succumbed from fatal hemorrhage. One case was reported in which a forty-dollar male died from this cause. It is possible that the losses sustained by some of the laity, as a result of fatal hemorrhage, caused them to look upon the use of disinfectants in the drinking water as the most satisfactory method of control.

In our first attempts at cropping, ordinary ten-inch curved compression forceps were used for clamping. Two forceps were used, one for each wattle, and both forceps were placed in position before the wattles were removed. These forceps did not prove satisfactory because of the difficulty of getting uniform pressure entirely across the wattle. In birds having heavy wattles the jaws of the forceps would spring apart when pressure was applied and the trauma produced was not sufficient to control hemorrhage.

Another type of curved forceps (the ten-inch Ferguson forceps) was then adopted. It was hoped that an instrument of this design would overcome the difficulties experienced by the style of forceps previously used. The heavier jaws of the Ferguson forceps did not spring apart when subjected to pressure but even then the hemorrhage could not be controlled without the use of tincture of iron chlorid. By using this solution, in addition to the forceps, the operation could be quite satisfactorily performed so far as the control of hemorrhage was concerned, but the method was rather slow and the iron chlorid was very destructive to the instruments. It was found, after cropping

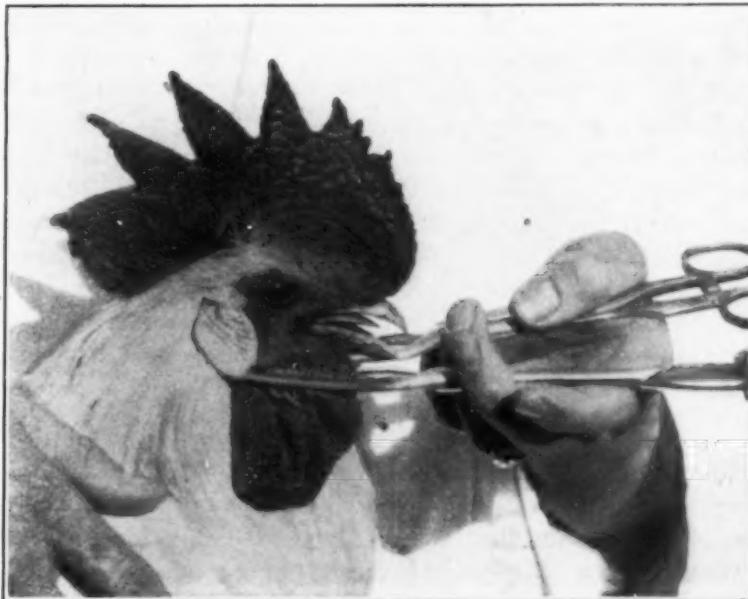


FIG. 2. Ferguson forceps in position on wattles.

the wattles of about fifty males, that the plating on the instruments was almost entirely destroyed and it was evident that after a short time the instruments would corrode and would have to be discarded. These forceps might be a satisfactory instrument for use on a small number of birds, but they are a trifle light in weight and would be short lived if cropping was to be practiced extensively. The retail price of these forceps was four dollars each, which, along with their short life, would make them impractical from the standpoint of cost.

A thorough search of the instrument catalogues offered only

one suggestion and that was that a Cook's pile clamp might be modified in such a way as to make a very satisfactory instrument. This instrument, we believe, while expensive, will completely control hemorrhage and also be sufficiently durable to be of service indefinitely.

This instrument which has been designed is a slightly curved ten-inch clamp, having jaws two and three-quarters inches in length. The serrations on one jaw of the clamp were reduced in size to avoid any possibility of cutting. Both jaws were increased to one-fourth inch in thickness with the idea of producing trauma over a greater area and thus prevent any hemorrhage. The crushing surfaces of the jaws are very similar to the Ferguson forceps, having a serrated ridge running longitudinally along one jaw, while the opposite jaw contains a groove into which the ridge fits, on compression. Because of the proximity of the wattles, it was necessary to remove the flange on each jaw so the two clamps could be placed in position before either wattle was removed. If only one clamp is used it is very difficult to remove both wattles evenly and also there is danger of producing hemorrhage from the wound of the first wattle, when traction is applied in adjusting the clamp on the second wattle. Other minor changes were made for the purpose of making the instrument more substantial, as several hundred birds must be operated upon each year and only a durable instrument would be practical.

#### EQUIPMENT FOR CROPPING

The equipment necessary for this operation is a table of suitable height for the comfortable and convenient work of the operator, two clamps as described above, one pair of curved scissors, and a supply of any antiseptic astringent dusting powder.

#### CROPPING

The cropping of wattles can be most speedily and successfully accomplished with the aid of an assistant. Restraint similar to that employed in caponizing might be resorted to but this would be slow and entirely unsatisfactory in cases where a large number of birds were to be handled.

The assistant grasps both legs of the bird in the left hand, both wings in the right hand, extends both the legs and the wings, and places the bird on its side on the operating table. He then quickly releases the wings, held in the right hand, slides the right forearm forward, rests it on the wings and grasps the comb in the right hand. By applying pressure downward on the right

forearm and placing the left hand, still grasping both legs, the bird is held in complete restraint on the table. With the right hand the bird's head is held stationary a few inches above the table, where the wattles can be conveniently reached by the operator.

The operator, standing directly before the bird, then fixes the clamp in position on one wattle, with the convex side of the jaw upward toward the mandible. The second clamp is then fixed on the opposite wattle in a similar position. When both clamps have been securely fixed in the proper position, the wattles are



FIG 3 Same bird, after cropping.

removed by cutting as close as possible along the ventral surface of the clamp, with a pair of curved shears. Dusting powder is then applied to the wounds, pressure slowly released on the clamps, restraint removed, and the bird allowed to go free in the pen. This is the method employed with Ferguson forceps, except that iron chlorid is used instead of dusting powder.

Not infrequently birds engage in fighting almost immediately after being released, little if any depression follows this operation and resulting infections are extremely rare. In one flock of four hundred forty-one cockerels, recently operated, one bird showed

a slight swelling which persisted for two or three days and disappeared. No fatalities or other bad results occurred.

#### CONCLUSION

Cropping does not disqualify birds for show purposes. It does not have any retarding effect upon the development of the birds. Cropping has controlled the losses resulting from edema of the wattles. We believe, therefore, that until further opportunity to study this disease presents itself, cropping, as outlined above, is the most practical method of control.

CHAIRMAN CALDWELL: While we are on the subject of poultry, we will ask Dr. Davis to outline, in a general way, poultry conditions in California, and then we will open the discussion and I am sure Dr. Davis will be glad to answer any questions.

DR. DAVIS: What few remarks I have to make about poultry conditions in California will relate particularly to the Petaluma district. Of course you are familiar with the fact that Petaluma is called the world's egg basket. It is the home of 5,000,000 White Leghorn hens. The district is about fifteen miles square.

The hatching industry is quite a thing. The largest hatchery we have has a capacity of 560,000 baby chicks every hatching period, or every twenty-one days. In the block where the University Laboratory is located, in the city of Petaluma, there are two hatcheries and the capacity of these two combined is 1,040,000 chicks every twenty-one days.

There are eleven accredited hatcheries in Petaluma, twenty-two in the county in which Petaluma is located. Most of these hatcheries run about 250,000 capacity; the two I mentioned are the two largest.

The poultry industry there is principally commercial egg production; 32,000,000 dozen eggs were shipped out of the city of Petaluma last year by rail or by water. That does not include the eggs that were carried out in trucks.

The principal diseases in mature birds are chicken-pox, ruptured ova, and nutritional disease due to a deficiency of green food (vitamin A).

The most common disease found in chicks is coccidiosis. Round worms are frequently found in both young and mature stock.

I have no further remarks to make about the poultry industry. If you have any questions I will be glad to answer them if I can.

DR. GLOVER: Mr. Chairman, I have had two conditions among flocks in my locality; one in which the wattles turned black and the chickens died in three or four days. This occurred mostly among the males and in one flock, and it occurred for two or three winters. Some winters the males all died and probably a few hens; other winters part of the males died.

Another condition I have had has been rather general; these chickens would stand around and go to sleep; the comb would probably be a little congested. They would walk off, stop, go to sleep and die in a few hours. This would occur in probably three or four chickens a week.

DR. DAVIS: What did you find on postmortem examination?

DR. GLOVER: Nothing in either case.

DR. DAVIS: I don't know what that is, I am sure.

DR. JOHN PATTERSON: The poultry proposition is just a side-line of mine, and not having heard the paper I can not discuss it at this time, but I just have this little thing to say about the poultry proposition, as I believe it should interest practicing veterinarians. It has always occurred to be that if a man was going to be a veterinarian he should include in his practice all of the domesticated animals, possibly wild animals in captivity, too.

Perhaps you can call a man a specialized veterinarian who thinks of nothing but vaccinating pigs or doing a horse business, but if he is going to be a practicing veterinarian in the true sense of the word I believe it is up to him, I believe he owes it to the profession, to look into these other things.

Poultry practice will surprise you after you get interested in it. When you consider the small animals and poultry, along with the larger animals, you are broadening out your field and you are helping yourself, you are becoming a real veterinarian in the true sense of the word and you are helping the profession. You go out into the country, you see a sick horse or a sick cow or vaccinate a bunch of pigs and if you can demonstrate to the owners that you know something about the rest of the domesticated animals that they have on that place, you are spreading the gospel, you are convincing the farming public that you are a real veterinarian in the true sense of the word. It is a hard job for some of us who, in days gone by, could see nothing but a good hog; it makes you a little nervous and you feel a little peculiar at times when it dawns on you that it is time to take an interest in small animals and in poultry, it takes a little while to get over that peculiar feeling, but it is good for you though after you get it.

It is surprising to find how the veterinarians in Iowa—I am better acquainted with those men than men of any of the other states—are taking hold of the poultry business. Our poultry industry in Iowa is not specialized in particular localities, like it is in some of the other states, but we have in the Middle West one of the greatest poultry sections of the world; those of us practicing out in the country have been letting it get away from us, and I want to tell you, from my own experience of the last four or five or six years, that I have tried to take an interest in the poultry business and it is worth your while. It may not sound good to you at first but you get interested in it.

There is a world of wonderful information on poultry diseases coming out now in the various journals and at the meetings. Compare the meeting that you will have here this time, or the state meetings that you have attended in the last year or two, with the meetings of ten, twelve, or fifteen years ago, when you never heard anything about a chicken at all; if you came to a national meeting or state meeting and anything was said about a chicken, it usually was around the table somewhere, when you were about to have a little postmortem for the sake of your appetite. Now you sit in a meeting and you hear a lot of talks on poultry. It is a self-evident fact that men are taking an interest in it and it is worth while, not only from a financial standpoint if you demonstrate to the public that you are a veterinarian in the true sense of the word. It is good for you and it is good for the profession.

DR. W. A. HECK: I would like to ask Dr. Patterson about the prevalence of ascarids in poultry and their removal.

DR. PATTERSON: Worms in general and ascarids in particular are the cause of more trouble in the poultry flocks of southeastern Iowa than any other one thing. I have had very gratifying results from the use of one-half grain betanaphthol per bird, given in moist mash, every other day, for four doses.

Coccidiosis is very often associated with ascariasis, and in this case I like to give one-half-grain doses of quinin sulphate on the alternating days when betanaphthol is not given.

DR. L. A. WRIGHT: Answering the gentleman's question, if he will use Black-leaf 40, in the strength prescribed for sheep dip, about four or five tablespoonsful to each pint of drinking water, he will get rid of his ascarids in chickens.

DR. C. F. NEIS: I believe that in addition to being an expert on diseases of poultry we should know something about these other phases of poultry husbandry. I find in my practice that I have all kinds of inquiries on how to feed, how to balance a ration, what is the best kind of a poultry house, and how to breed for the best results.

Now the way I got all my information was by taking a correspondence school course along that particular line. Now there are two very good correspondence schools in poultry husbandry—the American Poultry School, in Kansas City, is where I took my course. I paid thirty-five dollars for it and it is very easy for a scientific man, a man who is educated along scientific lines, like a veterinarian, to take that kind of a course, and it does you a great deal of good to be able to answer those questions intelligently and whenever they ask you a question of that kind, to be able to speak up and answer like you were sure of yourself and not to beat around the bush and refer them to the county agent.

That is one place you can beat the county agent out by being able to answer questions along the line of poultry husbandry or poultry breeding.

Another thing is to be able to recognize the various breeds of poultry. That is not very difficult for any one whose hobby has been poultry, like mine. I have not started in poultry practice in the last year but I have been in poultry practice ever since I have been out of school, which is something more than eleven years; poultry has been more or less my hobby and I naturally have paid a little more attention to that kind of work.

DR. PATTERSON: Mr. Chairman, Dr. Neis is a big fellow over there, I have known him a long while and he is a personal friend of mine. I think he will take in a friendly spirit what I am going to say; if he does not, I hope he will not take me to task for it here, but wait until we get off down there in our part of the country.

I want to throw a wrench into the wheels of that correspondence school proposition. I agree with him in this respect: there are some good poultry correspondence schools, teaching good methods of raising and handling poultry, but with the modern laboratories that we have in this country now, the material that they put out in those places is material that we get on these programs and that we find in our JOURNAL, and I am going to rear back and tell you to read your professional journals, get those articles from men in your profession. You will not find anything of interest to you in the correspondence school course in poultry that you will get by mail.

I hope Dr. Neis will take that in the way that he knows I mean it. I want to commend the splendid articles that are put out on poultry diseases, and I believe that that is the source of information for us as veterinarians.

DR. NEIS: I do not know that Dr. Patterson exactly understands what I was trying to get at. I do not mean that a man should just take these booklets or pamphlets and just learn them and recite them off according to their ideas. I find that a man gets a great deal out of them. Now I have bred poultry a great many years and you get a good many ideas from breeding. You must apply your own ideas, you must use your own head.

I admit we get a great deal of material like that in the journals, and I am not slow to read anything of that kind which would help me, but you must get the fundamentals of this thing. If you are not acquainted with the methods of handling poultry, you must get your fundamentals some place. Now a man in practice, like most of us, would not take the time to go and spend two years at a university studying poultry husbandry, and I am going to speak a little word in defense of those schools. While I do not approve of all the methods and especially their books on diseases, as found in these correspondence school courses, there is a great deal of boiled-down facts that you will get in a course of that kind.

Now any one who knows Prof. Quisenberry, who used to be at the head of the poultry experiment station at Mountain Grove, Missouri, a man of twenty-five years' experience, would hardly question his teachings, because they are based a good deal upon experience, and he is at the head of that school in Kansas City.

Of course the idea that I wanted to convey was that we get an insight into those things in poultry husbandry that possibly we would not get otherwise. It is along other lines besides diseases and breeding.

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### GETTING READY FOR THE CONVENTION

Thirty thousand predatory animals were killed in the state of Oregon during the last year and a half by hunters of the United States Biological Survey, according to Stanley G. Jewett, director of the work being done under a state and Federal agreement. The animals include bobcats, cougars, coyotes, and bears. Ten thousand skins were received in the Portland office during the period, and the sale of these brought \$13,796.90.

## ECONOMIC PROBLEMS OF INTEREST TO VETERINARY, PRODUCER AND PACKER<sup>1</sup>

*By H. F. VEENKER, Sioux Falls, S. Dak.*

Great strides have been made in the combating of disease and other conditions menacing the live stock industry. The past twenty years have shown constant and gratifying progress, all serving in the end for wonderful economy to the producer and the public.

For the past few years, however, a very common menace has been spreading at an alarmingly increasing rate, and the past winter of 1923 and 1924 has demonstrated in slaughtering establishments that prompt and intensive action is most necessary. This disease is none other than hog mange. It is a parasitic condition of swine and is most prevalent in these sections of the country where the animals are closely housed during the winter. Mange in swine more particularly concerns the farms of the Dakotas, Minnesota, Northern Iowa and Nebraska at the present time, but unless this disease is placed under control it seems now as though it would be spread over the entire Corn Belt within a few years.

Mange in swine is not difficult to control and if the swine producer will but resort to practical measures, this disease that is costing the swine industry hundreds of thousands of dollars every year can be controlled so that the losses will be insignificant. Unfortunately, the disease is usually not treated because of the fact that it does not produce death, but whenever swine are noted to have a rough skin, with or without the falling of bristles, they should be given immediate attention.

The loss to the swine industry due to mange is not because of the loss of life of the animal, but is due to the fact that the roughened skin is responsible for the placing of pork product cuts into lower grades and classes, with a consequent lower valuation.

Perhaps the most comprehensive method of bringing this subject to attention will be briefly to review, in a general way, all of the more common losses in swine produced in the Central Northwest states. Citing out this territory should be of a common interest to everyone, when considering that this section of

<sup>1</sup>Presented at the sixty-first annual meeting of the American Veterinary Medical Association, Des Moines, Iowa, August 19-22, 1924.

the United States is producing about one-half of all the hogs of our country. In order not to be misleading on a subject so important as this mange menace, your informant has found it necessary to gather certain data from statistics of a more or less prominent packer, who has slaughtered during the past year better than two-thirds of a million swine produced on farms of the Northwest. Hogs produced in the five Central Northwest states during the past year reach a total of 23,000,000 head. They are, of course, transported to many sections of the country for marketing and slaughtering, but where slaughtered without dilution by hogs from other territories, the findings gained from slaughtering statistics can well be applied on the total production.

On the foregoing basis the 23,000,000 hogs when brought to slaughter will develop the following results: 4,898,000 retained,

*Estimated disease and loss in hogs of Central Northwest  
Sept. 1, 1924*

STATE	HOGS	RETAINED	P. F. S.	CON-DEMNED	Mangy
South Dakota . . .	3,000,000	638,948	12,772	14,460	300,000
North Dakota . . .	1,000,000	212,982	4,257	4,820	100,000
Nebraska . . . . .	5,000,000	1,064,910	21,285	24,100	500,000
Iowa. . . . .	10,000,000	2,129,820	42,570	48,200	1,000,000
Minnesota. . . . .	4,000,000	851,928	17,028	19,280	400,000
Totals. . . . .	23,000,000	4,898,588	97,912	110,860	2,300,000

because of disease evidence, for further inspection and, on final findings, 97,912 are listed as suitable to pass only for sterilization, while 110,860 of these animals must be condemned as unfit for food.

This latter number of 110,860 hogs condemned can be briefly further detailed by citing the causes of condemnation, which are as follows: tuberculosis, 32,108; septicemia, 9,844; arthritis,

	Tuber-cu-losis	Hog Chol- era	Septi-cem-ia	Arth-ritis	Pneu-monia	Pye-mia	Abs-cess	All other
S. Dak. {	Cond. 4,188	4,188	1,284	1,040	928	968	416	1,448
	P. F. S. 12,104	468	0	0	0	0	0	200
5 States {	Cond... 32,108	32,108	9,844	7,971	7,123	7,419	3,188	11,099
	P. F. S. 92,790	3,588	0	0	0	0	0	1,534

P. F. S. = Passed for sterilization.

7,971; pyemia, 7,419; pneumonia, 7,123; cholera, 32,108; abscess, 3,188; all other less common diseases, 11,099.

This loss on hogs condemned because of being unfit for food, while without question wonderfully checked and controlled in recent years, is still a very immense loss. It means, first of all, that producers, who have fed animals such as these, have found it very slow to bring them to maturity and hence very costly in the way of grain consumption—no doubt a considerable loss to the producer. A more graphic loss demonstration can readily be made on the condemned hogs themselves on the assumption that the average live hog value for the past year can be fairly and conservatively estimated at \$15.00. Again, without being too specific, it can be assumed that a condemned hog has about a one-fourth valuation in the way of inedible products. On this basis there will be a \$11.00 per head loss on the total condemnation of the territory involved, or an amount of \$1,219,460. Hogs which can be passed for sterilization purposes, under supervision of government inspection and regulations, have in a general way only a one-half valuation, as compared to a No. 1 or wholly fit carcass. The loss here can then be figured at \$7.50 per head, on a total of 97,912 swine, or \$734,340.

By the same method of computation these loss figures can be readily further detailed to cover the more common causes as follows:

Tuberculosis.....	\$1,049,113	Cholera.....	\$380,098
Septicemia.....	108,284	Arthritis.....	87,681
Pneumonia.....	78,353	Pyemia.....	81,609
Abscess.....	35,068	All other causes....	133,594

The losses thus far mentioned are of course very large, but are on the other hand receiving quite proper consideration and prospects are bright that continued further progress will be made regularly to show greater control and prevention.

The problem of hog mange, however, is involved very little in the foregoing computations. Swine are not customarily wholly condemned because of skin ailment. In the more severe cases the entire skin must be removed as unfit for food; in more moderate cases only parts of the skin are removed, where the mange infection is more prominent. In lighter cases it is not always necessary to remove the skin, but primal cuts made for marketing must classify as lower grades, because of the apparent blemish.

Statistics and observations develop that damaged skins on

swine are most developed and prominent during the colder months of the year. This also happens to be just the time when a very large percentage of swine are marketed for slaughter. It also happens to be just the time when swine are in all other

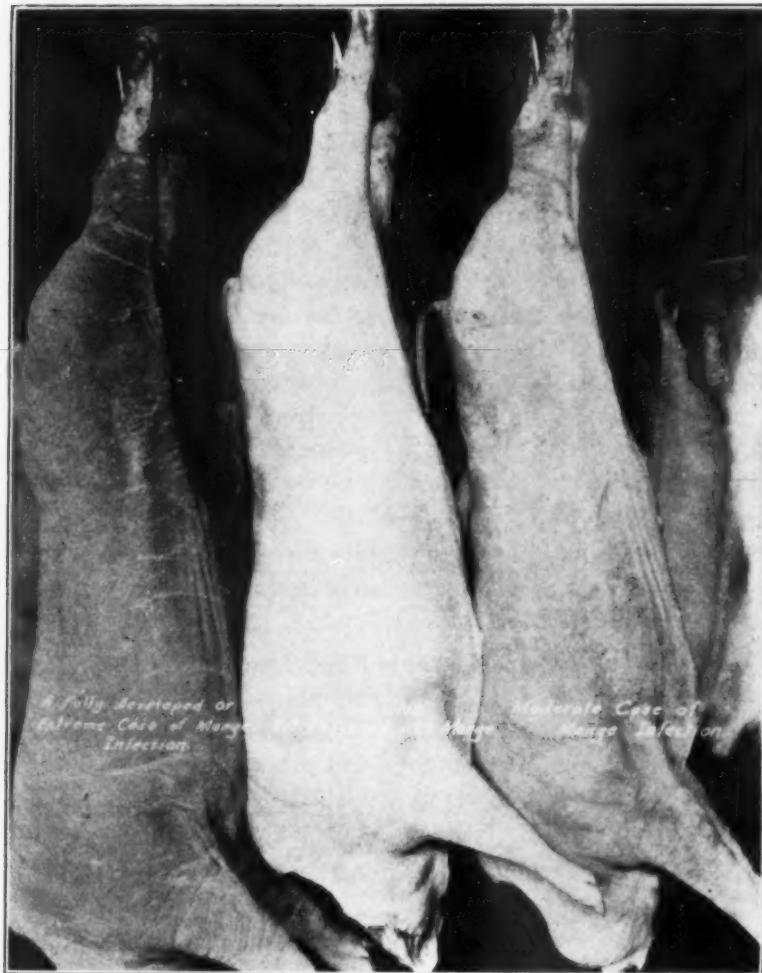


FIG. 1. Dressed carcasses showing damage done by mange. Left, extreme infection; center, normal; right, moderate infection.

respects best fitted and in prime condition for slaughtering and conversion into good food products.

In certain localities statistics go to show that about 40 per cent of the hogs slaughtered show evidence of hog mange. Assuming for statistical computations that there are localities in

the Northwest, or at least certain farms, which are free of mange, it will be fair to reduce this quantity to a 20 per cent basis. Again, to get at the proper computation, it is necessary to assume that during the warmer months of the year very little hog mange is evident, and it would therefore be conservatively correct further to reduce this percentage to a 10 per cent basis, so as to be applicable against annual production.

The 10 per cent of mangy hogs are further analyzed into two classes or grades. Five per cent, or one-half, represents the first, which classifies hogs whose mangy condition will not disqualify the meat products, although by no means as nice as hogs entirely

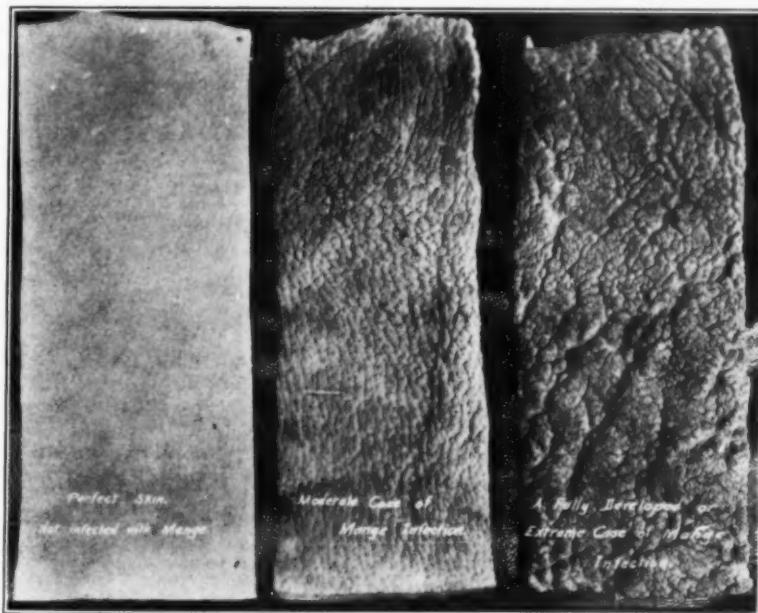


FIG. 2. Degrees of damage done by mange. Left, normal, non-infected skin; center, moderate infection; right, extreme case.

free of the disease. The remaining 5 per cent must be further subdivided into three grades. The first represents  $3\frac{1}{2}$  per cent whose skins are sufficiently objectionable to disqualify otherwise good hams and bacons from being first grade prime cuts. The second represents about 1 per cent where the skin is so roughened by advanced stages of mange as to throw the otherwise prime cuts into considerably lower valued grades. The third, or remaining one half per cent, carries such as have a very high degree of mange in the skin, requiring skin removal from the better cuts of pork.

which, because of such removal, must be entirely cut up into very cheap product.

Computing a valuation of the foregoing 5 per cent of mangy-skinned hogs, we have the following summary as applied against a 23,000,000 annual hog production. (Only 80 pounds per hog will be used, as this represents quite fairly the weight of primal cuts per hog.)

Three and one-half per cent, representing 805,000 hogs at 80 pounds per hog, can be very fairly discounted at  $1\frac{1}{2}$  cents per pound. This represents a loss of \$966,000.00.

The second division, representing 1 per cent, or 230,000 hogs, being of higher degree damage, is discountable by 3 cents per pound, or a money loss of \$552,000.00.

The third division, representing  $\frac{1}{2}$  per cent, or 115,000 hogs, must be discounted 5 cents per pound and represents a loss of \$460,000.00.

The total loss, therefore, is very conservatively placed at \$1,978,000.00.

In going back to the monetary losses for all diseases on hogs, a total of \$1,953,800.00, it will be noted, was the estimate for this Central Northwest territory. It just so happens that statistics and computations again show almost an exactly equal total monetary loss that can today be the condition due to hog mange in these same five states. This is called to your attention particularly to impress the more intensely the need for enthusiastic action toward real accomplishments. The regrettable feature about the whole situation is that this hog mange is so easily and positively controlled and eradicated, and yet stands for such a tremendous monetary loss that it can, in terms of fair reasoning, react to be only a producer loss.

Hog mange must therefore be thoroughly eradicated, if possible, This duty must fall somewhere. There should be no question in anyone's mind but that it rightfully belongs to the veterinary medical profession. This is the reason I am here before you on this subject.

Packers, large and small, are of course very anxious to slaughter good wholesome live stock, free from all disease and undue losses, but they have no particular axe to grind. A fair and honest margin is due any industry or enterprise, with allowances made for operating costs as well as wastes. In this case, whatever this waste means in the way of mange must of necessity be allowed for, and were it not present, therefore the waste not existing,

there is no question in my mind but that the saving would reflect back into the live stock valuation and therefore be a true economy for the producer. It would not be a practical thing for slaughterers of live stock to fight against this disease, and for competitive reasons no one packer would consider taking the lead in this respect.

The producers or hog raisers, or more specifically the farmers, are hardly the practical angle through which to work for mange eradication, inasmuch as they are not organized and systematized to combat this disease effectively.

It therefore very logically and practically appears to be a duty that should be wholeheartedly embraced by the veterinary medical profession, which is well organized in associations both state and national. Combined and cooperative action on the part of the Federal government, the state, the county, and the veterinary medical profession seems the true and effective solution. As there are positive remedies for complete eradication of hog mange and, as cited, a tremendous amount of wealth can be saved for the producers, this problem should be received with open arms as a pleasant duty.

#### DISCUSSION

**MR. VEENKER:** The photographs passed around were made last winter, just as the hogs were found showing this disease and there is nothing exaggerated about them; from the slightest degree up to the severest, there was a thorough and accurate computation made; forty per cent is what they ran during January and February. This month, as we have further taken statistics, there is a very, very small amount of mange, but the photographs represent the true condition and should show very graphically that hams and bacons made from hogs whose skins are free of such disease are worth much more than those of hogs with the accumulated seabs and extensively indurated skin which must be discounted.

When I say three cents or five cents a pound discount, you must all have in mind that that is on the higher grade meats and that all parts of the meat do not have those values to them; hams and bacons may have a value of twenty or twenty-five cents. Other parts of the hogs, of course, are down to two and three cents a pound, so you must not base these discounts on prices on live stock rates, because live stock rates and finished product rates are two entirely different propositions. In the first place, the animal in the live state is reduced by one-third by the time it is dressed, and then there are other cheap products on the hog that you could not get a live value price for, but when we come into these higher priced cuts of meat they have to make up for dressing loss, labor expense and other costs. Those discounts of one, two, three, and five cents a pound are the differences between high priced bacon and cheaper grades of bacon and hams.

**PRESIDENT STANGE:** It seems to me, gentlemen, that Mr. Veenker has very clearly and vividly brought before us some losses in our live stock industry which we locally usually do not appreciate. It also illustrates that the interest in the practitioner's work is not confined to his own community, but the work of the veterinarian follows the live stock until it is finally consumed by the public.

If there is any one who would like to ask Mr. Veenker any questions I am certain he would be glad to answer them.

**DR. E. E. CHASE:** I would like to ask Mr. Veenker if any action has ever been taken by any of the packers to ask, in the localities where this heavy percentage of skin diseases in hogs would come from, that they be bought subject to an inspection.

**MR. VEENKER:** I meant to state just briefly that it would not be the proper angle to start a campaign against hog mange or sarcoptic mange among the packers, because there are too many independent packers nowadays, working by themselves, none of whom would dare to assume the lead in discriminating against hogs having mange, because the moment that would become known by producers and shippers, you would be dodged altogether and no one would ship to you, so as a consequence no one packer will make a move to start objecting to hogs having mange because it would ruin his chances for buying the necessary amount of live stock.

**DR. CHASE:** I am from the Pacific Coast—Portland, Oregon—and there are certain localities that ship hogs into the Portland Union Stock Yards and they will not buy these hogs on account of the heavy percentage of tuberculosis unless they buy them subject. Consequently, we are getting, on the Coast, what we call tuberculosis-free areas, and they are getting more for their hogs. There are places where the percentage of tuberculosis has gone so high that the packers will not take a chance on buying hogs unless they buy them subject.

**MR. VEENKER:** You get your hogs from our Northwest and you can buy them on certificate that they are free of tuberculosis, or that they are free of hog mange, but you are far enough away and your demand for hogs is so limited that you can be particular in buying hogs. The packers of the Northwest are expected to and do buy all the hogs they need. Each expects to buy his share, but he could not make that discrimination and get away with it very long, because as soon as it became known in any community that you were discriminating against tuberculous hogs or mangy hogs, the shipments would all go to some other city.

**DR. H. B. RAFFENSPERGER:** I am quite certain that sarcoptic mange in hogs is quite widely distributed and common in herds in those parts of the United States where hogs are raised in any considerable numbers.

When mange shows in the marked skin lesions and dropping out of hair it can be controlled by better feeding and surroundings, provided there are no other debilitating diseases present in the herd.

I am certain none of you have observed an advanced case of sarcoptic mange in a good thrifty hog, and where you have slight cases pick them out of the herd and place them on a good supporting feed, and they will clear up without any further treatment. However, I think it a good practice to oil your pigs, but I am making the statement to show you that whilst sarcoptic mange is quite common, the control is a local proposition—good feeding and good management. It appears to me that regulatory control, as suggested by Mr. Veenker, would not be very practicable.

**DR. A. T. KINSLEY:** I would like to ask Dr. Raffensperger whether or not it would be cheaper to resort to dipping methods.

**DR. RAFFENSPERGER:** I would not want to answer that. It is very efficient to dip pigs in oil; dip them head and all. The sarcopts get around the ears and where you simply spray them the oil will not be sufficient unless you cover all parts of the animal. If they are not too large you can dip them in the oil. It is good for the skin and it is mighty efficient.

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#### ACCOMODATING

Mrs. Neurotique: "Doctor, don't you think I have traumatic neurosis?"

Doctor: "Not yet, but I'll write you out a list of the symptoms and you can go home and start working on them."

## VETERINARY SERVICE FROM THE VIEWPOINT OF THE PACKER<sup>1</sup>

By E. N. WENTWORTH, *Chicago, Ill.*

*Director, Live Stock Bureau, Armour and Company*

I have often been called on as a pinch hitter even though I doubt if I have ever knocked a home run. Occasionally, however, I have been lucky enough to meet the ball squarely, and to make a two-base hit out of what should have counted for four bases. I need not call your attention further to the fact that my chassis is designed on "truck" rather than "racing-car" lines. On this account and on account of the perspiring thermometer, I think they rather doubted my ability to run bases. After bringing me out here as a pinch hitter, I think one glance caused Dr. Strange to decide he had better go back to his regular batter where he could be sure of base-running ability. Furthermore, I feel that the regular batter, Mr. Veenker, knocked a home run and scored a big tally in his paper which just preceded me.

It is very difficult to estimate just how serious the question of sarcoptic mange, which Mr. Veenker discussed, is to the packers as a whole. I made an investigation at one of our larger plants, but not our largest, last spring, and found that for a period of one month we had a loss due to lowering the grading of products of approximately \$35,000. Since we cannot be prepared to meet such unexpected losses as that, you can see that, in a very short time, such a condition could put us in a very bad way financially.

The general question of animal diseases, of course, is more far-reaching than we usually consider because we usually think only of the diseases that terminate rather immediately, and perhaps rather spectacularly in the death of the animal. The more insidious diseases, the diseases which do not produce immediate economic loss to the producer or the breeder, are very likely to be overlooked, not only by the producer but many times by the veterinarian himself. If the producer felt the importance of this situation, I am sure he would call in the veterinarian for consultation just the same as he does on the more serious diseases, but usually the producer does not appreciate their importance, and for that very reason fails to seek his veterinary counselor for help on these problems.

Mange is only one of a number of diseases which are overlooked, to a certain extent, by the breeder, because such diseases are of

<sup>1</sup>Address delivered before the sixty-first annual meeting of the American Veterinary Medical Association, Des Moines, Iowa, August 19-22, 1924.

no immediate importance from an infectious standpoint to the human race. On the other hand, it is only one of a great many diseases which in a year cause enormous losses *in toto* to the packing industry.

I am not one who believes that the function of the veterinary profession is the combating of disease alone. It is, of course, the biggest function, but it seems to me in the communities where the most influential veterinarians are at work, that their efforts far exceed the limits of mere disease-fighting, disease-curing and disease-prevention. It often appears that, when the veterinarian is in a position to be a real leader in the live stock husbandry of his community, he reaches his fullest and greatest sphere of influence. A great many veterinarians who do not attain this eminence fail because they acquire the viewpoint wherein the bacterium or the germ that causes the disease is of more importance to them than the animal it affects.

I was in Europe during these last two and a half months, and at the meeting of the Highland and Agricultural Society they had a very bitter discussion of the foot-and-mouth disease situation in Great Britain. There are two very distinct opinions in Great Britain, the Scottish breeders taking the same attitude that our American breeders and veterinarians do; that is, that it is absolutely necessary to eradicate all sources of infection for the disease. On the other hand, some of the English breeders hold more to the continental idea, that it is better to take the losses due to the disease and try to save the animals.

In Holland, for example, I found, in going over the records of the Friesian cattle, that the average annual record for a herd would be 3,000 gallons, or 2,500 gallons. This might continue for two or three years and then, subsequently, one year would occur in which the record would be only 1,200 gallons or perhaps less than half. If inquiry was made as to the reason for this decrease, the breeder would say that he had foot-and-mouth disease in his herd that year. In general, the continental breeders have considered it to be more important to them to reinstate their producing cows than to eliminate the disease.

The English breeders seem to have absorbed something of this same idea. Anyhow it precipitated as bitter a discussion as I have ever heard at the meeting of the Highland and Agricultural Society at Perth, in Scotland, since the idea was expressed by the British breeders that their veterinary representatives who are controlling the disease, the quarantine and so forth, in Britain,

have come to the point where they really consider the virulent cause of foot-and-mouth disease as more important than the animals affected.

The question at issue is as I have outlined. I am merely presenting the frame of mind of certain breeders. On the other hand, when the veterinarian in his local community shows he has an interest in the live stock promotion of that community, over and above the mere fighting and eradication of disease, he is then never subject to such a criticism as that which I have mentioned. It is the broad interest of the veterinarian in the live stock population of his county, just the same as it is the broad interest of the physician in the human population of his community, that really makes him the leading and dominating man in community affairs.

From the standpoint of the packer, I do not believe that I can supplement very much what Mr. Veenker has said. It seems to me that it is highly important that we have as clean, as high class products coming out of our agricultural communities for meat food products as can be obtained, and there is no question but what the methods of sanitary science, as promoted and promulgated by the veterinary profession, offer the greatest hope for improvement of present conditions.

Those of you who are familiar with the work of the swine extension man in Indiana, Professor Wiley, may know something of the fine work he has done through promoting sanitary methods. You may remember that he was able to demonstrate very definitely that practically half the pigs born in Indiana, two or three years ago, failed to reach weaning, through insanitary conditions on the average farm, and he showed that a tremendous saving of pigs occurred through such simple expedients as removing the sow from the ordinary farrowing barn with its insidious parasitic and bacterial infections, even to the horse stall or any place where other animals had been kept. As I remember, in the particular cases under his observation, an average of about seven pigs out of eight were saved instead of four and one-half.

It is this promotion of sanitary methods in which the packer has the greatest interest, at least when we consider the three-cornered relationship between packer, veterinarian and producer, and that is the thing for which we look to the veterinary profession for accomplishment.

I realize that it is an easy thing to stand up here and say that we are passing the responsibility to you to do something, but the

important point is that something must be done from the stand-point of economics—that is, from the sheer standpoint of saving the wealth produced on farms.

There is no question in my mind but what the service of the veterinary profession, the boundary of development to which it can aspire from an economic standpoint, is limited entirely by what it can save in live stock losses. If the veterinary profession cannot save money for producers, or for the commonwealth at large, then it has no reason for existence and the degree to which it can expand and develop depends entirely on the amount of savings which it can secure for cattle, sheep, swine and horse breeders. Therefore, the big field for attack in the future seems to be, not so much the combating of these spectacular diseases to which I have previously referred, as in so organizing and so helping the farmer and the live stock producer that the more insidious things, the types of diseases, the types of malnutrition, the types of bad management which really require the medical, rather than the straight producer's viewpoint, will be given attention by the veterinary profession, and insofar as it can keep the cost of its services less than the great losses which are occurring today, just that far will the veterinary profession develop and improve.

I am reminded a little bit—it is in extremity perhaps—of a verse I saw in an English paper a few years ago which lays down the principles of sanitary science in a little more extreme way than we are at present prepared to recommend, but I am very certain that if all of its suggestions can be put into practice, the packer, as the buyer of the raw materials of the farm, will be perfectly satisfied with the results of the producer and of the veterinarian, and in closing I am just going to repeat this bit of verse—it will be something like the ostrich egg set up as an ideal for the hen, something for the veterinary profession to shoot at.

“We've bathed the bullock's tootsies  
We've cleaned the rooster's ears,  
We've trimmed the turkey's wattles  
With antiseptic shears.  
With talcum all the guinea hens,  
Are beautiful and bright,  
And Dobbin's wreath of gleaming teeth  
We've burnished snowy white.

*"With pungent sachet powder  
We've glorified the dog  
And when we have the leisure,  
We'll manicure the hog.  
We've done all in our power  
To have a farm de luxe  
We've dipped the sheep in eau de rose  
We've sterilized the ducks.*

*"The little chicks are daily fed  
On sanitized worms,  
The calves and colts are always boiled  
To keep them from the germs.  
And thoroughly to carry out  
Our prophylactic plan  
Next week we think we shall begin  
To wash the hired man."*

#### CONTROL OF BACILLARY WHITE DIARRHEA

Under the above title a bulletin has been prepared by G. E. Gage and O. S. Flint, of the Department of Veterinary Science and Animal Pathology of the Massachusetts Agricultural Experiment Station.

The bulletin states that, during the year just past, 38 poultry plants representing 11,082 breeding birds have been found to be free from bacillary white diarrhea. This result has been accomplished only through the cooperation of the poultrymen with the Experiment Station for the elimination of this destructive disease. It is this increased interest and cooperation on the part of poultrymen which has been one of the most encouraging features of the work. This bulletin reports the details of the work completed in the testing season ending July 1, 1924, together with a summary of the improvement effected since the establishment of the testing work.

The authors have dropped the name *Bacterium pullorum*, and have adopted *Salmonella pullorum*, according to the newer classification of the Society of American Bacteriologists, which is now coming into more general use.

#### ABSENT-MINDED

Patient: "Doctor, give me some good advice. I snore so awfully that I can't sleep on account of it."

Doctor: "Couldn't you go to bed in the room next to this?"

## PATHOLOGICAL CHANGES IN THE CENTRAL NERVOUS SYSTEM IN CANINE DISTEMPER<sup>1</sup>

By BENJAMIN ROMAN, M. D.

*Director of Laboratories, Buffalo General Hospital*

and CHAUNCEY M. LAPP, M. D.

*Buffalo, N. Y.*

Our interest in canine distemper started with an autopsy we performed for Dr. Harry Martin on a dog suffering from that disorder. The animal showed lesions in the central nervous system that were rather startling to us inasmuch as they had a certain resemblance to lesions of the same organs in certain well known human diseases.

Through the courtesy of Dr. Martin we were soon able to follow this with two further autopsies with identical results. Such findings did not seem to be universally known and it therefore appeared as if we had made a step forward in the problem of distemper.

For, so far as we knew, the nature of this affection was far from clear. The lesions that are said to be found in distemper are anything but characteristic. In other words the anatomical changes (outside of the central nervous system) are not specific for that particular disease. One is accustomed, as it seems, to associate with distemper such lesions as conjunctivitis, rhinitis, laryngitis, bronchitis, bronchopneumonia, certain skin eruptions, etc., but such lesions may occur independently, and also in association with a variety of diseases. If, then, we succeeded in establishing some definite changes as peculiar to distemper and to distemper only, our conception of this condition as a disease entity would be very much strengthened, at least the underlying cause for the nervous symptoms would be cleared up, to say nothing of greater possibilities for rational therapeutic measures.

However, imagine our disappointment when, in the subsequent autopsies that we carried out at different times on ten dogs said to be suffering from distemper, we failed to find any changes comparable to those of the first animals.

If we should, in an attempt to explain this discrepancy, assume for a moment that there was a mistake in the diagnosis,

<sup>1</sup>Read before the Western New York Veterinary Medical Association, Clarence, N. Y., July 10th, 1924.

then this mistake must have occurred in all the ten dogs of the later series, or in all the three of the previous one. Which of the two series, then, had distemper, the first three or the subsequent ten animals? Before attempting to answer this question, we must take up the details of our findings.

The first dog was an English setter, one year old. He came down suddenly with a chill, followed by a rise of temperature and developed, two days later, symptoms of catarrh of the upper respiratory passages. Later he became languid and showed twitchings of the left hind leg. After a week, during which he was treated with Fowler's solution, the animal apparently recovered. However, the twitching of the left hind leg soon returned, growing gradually worse and finally going on to paralysis. Twenty-five days after the onset of symptoms the dog was killed.

#### AUTOPSY FINDINGS

At autopsy we found hyperemia of the larynx; diffuse catarrhal bronchitis; some inflammation of the nasal sinuses; general hyperemia of the brain and cord, with indistinct areas of softening in the region of the pons and medulla, including a few punctate hemorrhages.

The second dog was a collie, nine months old, that was first taken with convulsions and a temperature of 105.5° F. Slight improvement took place after three hypodermic injections of bacterin. Five days later convulsions set in, whereupon he was killed. No paralysis was noted in this case.

The autopsy revealed marked injection of the conjunctivae; purulent discharge from the nose; and diffuse catarrhal bronchitis. Examination of the brain and cord revealed no gross changes.

The third dog was an Airedale, eight months old, that developed distemper November, 1923, while boarding in the veterinary hospital. As a result of an injection of bacterin an abscess occurred on the neck. After a week he rallied and was taken home. On March 14, 1924, he was brought back with chorea in both hind legs. He soon developed convulsions and became vicious. Chorea continued, involving all the extremities, including the neck and tail. Both hind legs became paralyzed. The temperature ranged between 103 and 104° F. On April 15, the dog was killed.

The autopsy yielded nothing remarkable.

The microscopical examination of some of the organs of all these three dogs, while it resulted in the finding of no important changes in the liver, the heart muscle, the lungs, the spleen and the kidneys, yielded those exceedingly interesting changes in the brain and cord which form the basis of this paper. Without burdening you with histological detail, the essential pathology found in the central nervous system may be summed up as follows:

A low grade of inflammation of the meninges of the brain and

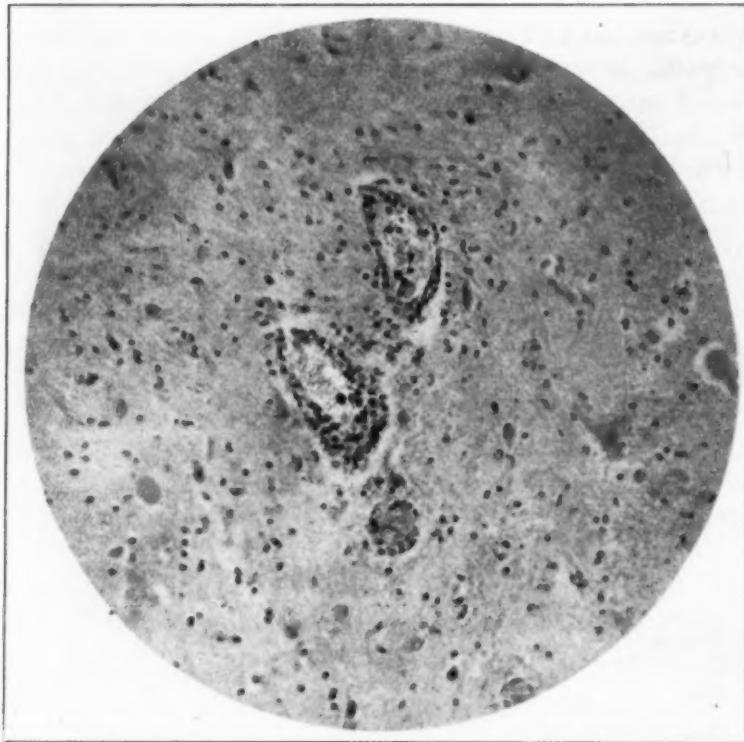


FIG. 1. Canine distemper. Section of the spinal cord, showing inflammation of gray matter.

cord—a meningitis; an inflammation of the spinal cord, medulla, pons and cerebellum, in other words, an encephalomyelitis, accompanied by numerous microscopical hemorrhages and by a high grade degeneration of nerve cells. The affection varied slightly in degree in the three animals and was of greater severity in all of them in the cord than in the brain. The distribution of the lesions in the cord also varied slightly in the three dogs in different levels. Here, as well as in other regions of the cord, the

inflammatory infiltrate showed no regularity in its distribution; at one place it seemed as if the gray matter had the greater burden of the affection and at another place it was chiefly the white matter that showed the inflammation.

Essentially then, the affection in the cord was a myelitis and specifically a polio- and leukomyelitis. Altogether the underlying lesions of the nervous system are to be characterized as meningo-encephalo-polio-leukomyelitis. The character of the infiltrate, the nature of the cellular elements, and their charac-

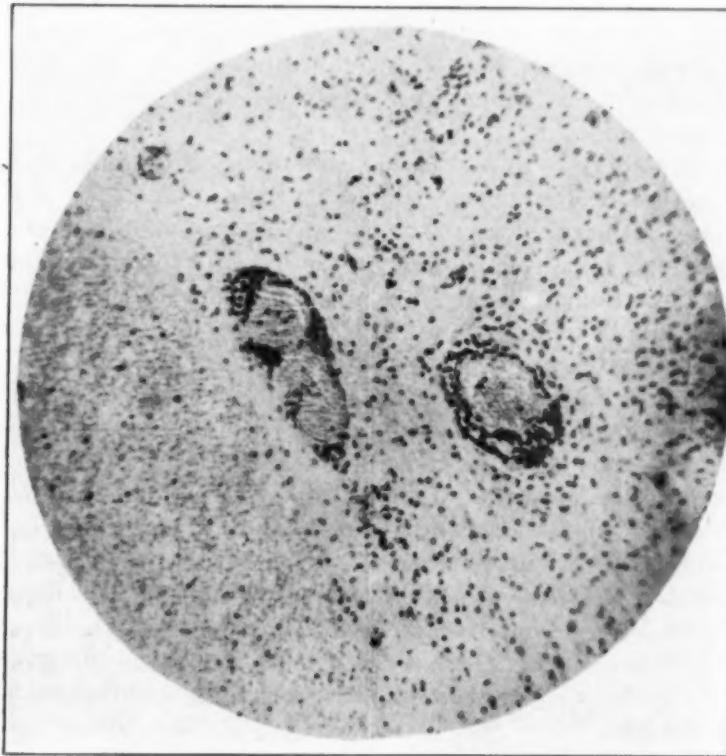


FIG. 2. Human poliomyelitis. Section of the spinal cord, showing inflammation of the gray matter.

teristic "cuffing" of the vessels, especially as it occurred in the anterior gray horns of the cord, reminded us strongly of the lesions found in anterior poliomyelitis in man—the well-known infantile paralysis. Moreover, the lesions in this human disease are, as is well known, frequently indistinguishable from another human disease called encephalitis lethargica, or the new form of sleeping sickness. Hence, it may be said that an analogy exists between the lesions we found in the central nervous system of

the three dogs on the one hand, and those of infantile paralysis and sleeping sickness of human beings on the other hand.

Our examinations extended only thus far. Our interests lying mainly in the pathological changes of the central nervous system, we have for the time being omitted any bacteriological work on this disease, so that from personal experience we are not in a position to say whether certain microorganisms that have been described as the cause of this disease, especially the *Bacillus bronchisepticus* of Ferry, which is probably identical with the organism described by McGowan in England, and confirmed by Torrey and Rahe, are really the responsible factors in distemper. We have, however, made several attempts to demonstrate bacteria in the inflammatory infiltrations of the nervous system without results.

If we were to be guided in our bacteriological examinations by the nature of the changes found in these animals we would, because of their analogy to the human diseases mentioned above, rather start our investigations on the line of a filtrable virus, as both these human diseases are apparently due to such a virus. This would be in consonance with the theory of a certain French observer Carré, who expressed this view about distemper.

Yet, it is not impossible that a certain micro-organism of the bronchisepticus type should produce such lesions as we have described above, and until we are able to furnish proof to the contrary, we must not discredit the *Bacillus bronchisepticus*; although, if the lesions we have described are really specific for distemper, it would first seem necessary to prove that the *Bacillus bronchisepticus* is able, after being injected into dogs, to produce such lesions, before we can accept it as the exciting agent of distemper. There is no evidence that those who worked with the *Bacillus bronchisepticus* have taken such lesions into consideration.

#### WAS IT DISTEMPER?

This brings us back to our original question, namely, did our three dogs have distemper? Is it not more likely that the ten subsequent animals, wherein we found no such changes, really had the disease, while the first three dogs were suffering from some thing else, whatever it may have been? This seemed logical, and our tendency was originally to solve the problem in this manner until we found in a study of the literature on this subject that, true to the old saying, "there is nothing new under the sun," Cerletti, an Italian working in Germany, in 1912, described

lesions in the brain and cord of dogs suffering from distemper which were apparently analogous to those seen by us. We have also encountered several further references in the literature to affections of the cord of an inflammatory nature (Dexler, Spielmeyer), which might very well conform to the specific changes we thought to have been the first to discover. This being the case it would hardly seem justifiable to reject our first three cases and reason that they could not have been distemper because they showed those lesions.

On the contrary, the lesions found in the central nervous system of our three dogs now seem to strengthen the diagnosis of distemper and henceforth we may have to demand such lesions for the establishment of a diagnosis; their presence would make the diagnosis absolute, while their absence would not necessarily exclude distemper. For, whatever the exciting agent, we know, in analogy with well-studied human diseases, that the organism may kill the animal long before specific lesions have developed and, on the other hand, the duration of the disease may be so prolonged that the original lesion will have disappeared or will be blurred, the animal dying from some other intercurrent affection. Another factor must be reckoned with. As said before, the lesions vary in different levels, especially in the cord. Some sections we have examined, even in the three positive cases, showed no changes whatever. It is thus clear that it is possible to overlook such changes.

#### DISTEMPER A COLLECTIVE TERM

Taking all these things into consideration, it will perhaps not be difficult to understand how we failed to find any positive lesions in another series of dogs in spite of their having had distemper. If we now add the possibility of distemper, after all, from its clinical aspect, being more or less of a collective term for several canine conditions, a view which has time and again been offered by many authors, we will not be surprised to encounter even a larger series of negatives in succession in spite of a perfectly justifiable "positive" clinical diagnosis.

But, if this conclusion is justifiable, if it is true that not all cases that clinically look like distemper really are distemper, the question arises how are we ever to establish a definite clinical diagnosis—the most important step in the rational handling of any disease. The answer to this question, after all we have said, would seem to depend upon a more firm establishment of the relation of the lesions described to this disease. Notwithstanding

our own findings and those of Cerletti and others, it would be reasonable to demand more extensive studies along these lines. What we have done is to be looked upon merely as a hint as to further work, and this is perhaps the main reason why we have taken the liberty to appear before you this evening. It is important to examine animals that appear to have distemper very closely, and to keep accurate clinical histories, especially with regard to the nervous symptoms.

Wherever possible a postmortem examination should be made and one must not satisfy himself with gross examination alone. It is extremely important to examine the central nervous system microscopically, for all our findings were practically only microscopic. Furthermore, we would suggest that in all such cases a lumbar puncture be made and the fluid examined immediately with regard to its albumen and globulin content, its copper-reducing body, and especially with regard to its cell content. In one of the three dogs we autopsied we fortunately drew off some spinal fluid before we opened the carcass and we were able from that alone to diagnose an inflammatory condition of the meninges.

#### EXAMINATION OF SPINAL FLUID IN ORDER

When these pathological changes shall have been demonstrated in a large series of cases of distemper, when the lesions in question shall be permanently established as the basic pathology of distemper, then the examination of spinal fluid will naturally become the crucial test for that disease, very much like in infantile paralysis, where we depend so much upon this examination for a diagnosis, at least for the elimination of other forms of meningitis.

If it should turn out that the *Bacillus bronchisepticus* is really the exciting agent of this disease it will be possible to culture that microorganism from the fluid which will then be the best criterion as to whether a dog has distemper or not.

Still better, just like in certain human diseases, the efficacy of a serum or vaccine for cerebro-spinal cases is enhanced by intra-spinous injections, so may, in the case of establishment of a specific serum for distemper, the therapeutic value of that serum be enormously increased by such a procedure.

If, on the other hand, it should be found that distemper is due to a filtrable virus, a certain amount of help could be obtained by use of serum from dogs that have overcome this disease and have thus developed in their serum some immune bodies against

distemper. This, too, would have to be employed intraspinously. This is exactly what we are now doing in infantile paralysis and to a certain extent also in measles. While such a procedure in the human being is admittedly only a makeshift, for obvious reasons it could in animals become the standard method of treatment.

We have become interested in this disease, it is confessed, not because of the distemper problem, but because of the great analogy of the lesions we found with the two human diseases mentioned above. It may also be added that there is still another human condition which is also based upon an inflammation of the cord, perhaps more especially of the posterior gray horns. This is a skin disease known as herpes zoster, or shingles. Perhaps some of the skin diseases mentioned in your literature as associated with distemper are due to the fact that along with the anterior gray horns the posterior horns are also affected, as we found them in our dogs with distemper. We are particularly interested in the relationship of some of these human diseases to the canine affections. So far as we know human poliomyelitis is transferrable only to monkeys, while encephalitis lethargica does not seem to be transferrable at all to lower animals, in spite of some isolated reports to the contrary. Yet, we are not quite certain that the dog has been extensively experimented with in those diseases. In view of our findings we would not be surprised to learn that a certain epidemiological relationship does exist between one or the other of the diseases mentioned, proving, perhaps, a similarity in the virus.

#### SUMMARY

1. It seems as if the basic lesions of distemper, regardless of the clinical form, consist of specific changes in the central nervous system.
2. In view of this the bacteriological researches would have to be revised.
3. According to this the examination of cerebro-spinal fluid, as obtained by lumbar puncture, would be the best clinical procedure for the establishment of the diagnosis of distemper.
4. The outlook for successful therapy seems to lie in the direction of intraspinous treatment.

In conclusion we would like to express our gratitude to Drs. Martin, Hinkley, Fehr, and McClelland for their kind cooperation and interest.

## TUBERCULIN TESTING IN AREA WORK<sup>1</sup>

*By H. F. WALKER, Petersburg, Va.*

I feel that I have been honored by the officers of this Association in having been asked to present a paper at this meeting along the line in which I have been working. As most of you know I have been employed by the State Veterinary Department, for some time, to devote my whole time, together with two other State men, working in cooperation with the Inspector-in-Charge of the Bureau of Animal Industry, and three other Federal veterinarians, on the tuberculosis eradication and control project.

Dr. Farmer wrote me asking for a paper on tuberculosis, with special reference to area work. Now, my personal experience on area work has been limited, never having had charge of a county devoted to area work. However, in furthering our campaign against tuberculosis, I have had opportunity to help out by doing seven weeks' work in Loudoun County, and two weeks' work in Roanoke County, these being the counties in Virginia doing this work. My experience in this work leads me to believe that only through a systematic, well planned, well advertised campaign of area work can our profession make any marked impression towards eradicating tuberculosis.

Now, a few words of explanation as to what area work is, how it is started and conducted. In the first place, it must be understood, of course, that in Virginia it is through cooperation with the County Board of Supervisors. They issue a proclamation, or order, to the effect that the county is going to do systematic tuberculosis eradication work, and establish rules and regulations regarding the movements of untested cattle into and within the county. They employ a graduate veterinarian on full time, and he has the authority to enforce the quarantine regulations of the supervisors. His time is taken up in applying and reading tests, in holding postmortems on reactors, supervising the cleaning and disinfection of infected premises, etc.

There are over 300 counties in the various dairying states that have adopted the area plan. These counties contain approximately 15 per cent of the cattle population of the United States. In area work indemnity is paid by the State and Federal governments when funds are available. When exhausted, systematic

<sup>1</sup>Read before the Virginia State Veterinary Medical Association, Ocean View, Va., July 10-11, 1924.

work is not attempted unless, as in some counties, the supervisors will make a special appropriation from county funds to cover indemnity. This was done in Loudoun County last year, when the State and Federal funds were exhausted.

In the two counties, Loudoun and Roanoke, in which systematic work is being done in this State, there were tested up to May 31, in Loudoun, 14,465 cattle, finding 253 reactors (1.75%). In Roanoke, 7,035 cattle were tested, finding 147 reactors, approximately 2 per cent. Not more than three herd owners in each county refused to allow cattle to be tested, and I understand some of these have since seen the light, and asked that the test be applied. Considering the fact that this work has been conducted solely on a cooperative basis, tuberculosis eradication, under the area plan, is the most popular progressive movement that was ever put on in any county.

The first test in each county has been completed, and they are going to start the second at once. Each of these counties has its own graduate veterinarian in charge of the work, and the State and Federal governments give all assistance possible in the testing of cattle, but by far the largest part of the work is done by county veterinarians.

The cost of testing cattle, under the area plan, figures out to be about one-half the cost under the accredited herd plan. In some counties, it has been done for 12 cents per head; 25 cents per head is a very good average.

In Roanoke County, the supervisors made an assessment of 40 cents against each head of cattle, and made no addition to taxes, thus those benefited paid the bill. About 30 counties in various states have been classified as modified accredited areas, having less than one-half of one per cent infection. It is very reasonable to believe, and has been demonstrated in states where area work is being conducted on a large scale, that the private practitioner is one of the chief beneficiaries of it, where he enters into the campaign and shows the herd owner that he is interested in his welfare.

By far the larger part of cattle tested in Virginia are tested by private practitioners, and it should be so. In looking over the records in the office of the Inspector-in-Charge of Tuberculosis Eradication, I found that there had been tested in this State, for one year, under supervision, June 1923 to June 1924, exactly 44,784 head of cattle, in 2,199 lots, finding only 710 reactors, and of these cattle tested, the accredited veterinarians tested

1,007 lots, consisting of 19,803 head. Now remember that this was in accredited herd work only, and does not include any cattle tested in Roanoke or Loudoun counties, neither does it include the larger number, in the office of the State Veterinarian, of cattle not under supervision. These I did not have time to enumerate, but from the number of reports, I would believe them to be as many, or more. Any one interested could get exact figures, showing that the largest part of tuberculin testing in this State is being handled very efficiently by the practitioner, and in the future there will be more and more of this to be done as the following figures from the official report of the B. A. I. show that in the month of May there were tested in the United States 55,358 lots, consisting of 626,257 cattle (with 21,475 reactors) and on the waiting list there are 273,189 lots, containing 2,977,304 cattle.

It seems to me that every eligible veterinarian in Virginia, and in the United States as well, should prepare himself to handle this work, even though there are no accredited herds in his immediate territory, at present, for it will not be very long before there will be herds under supervision in every county. In the past two weeks, I have started 43 new herds under supervision, in four different counties.

The accredited veterinarian can also start a herd on the accredited herd plan, and apply all tests but one, and the owner will receive credit for the tests toward his accreditation.

One of the reasons for the large number of cattle tested, nowadays, is the official recognition of the intradermic test, now recognized by the B. A. I. and most states. I first used this test in Colorado, in 1915, where it was officially recognized at that time. With this test, one man can test a very large number of cattle in two days; one for injecting, and one for reading. I do not know the record number tested in one day. The most I ever did was 230, a week's work with the old subcutaneous method. We never think of applying that test now, and I have had only one owner to tell me he preferred it. In combination with the intradermic we use the ophthalmic, on infected herds, and as a check I find it a decided aid in making a diagnosis in slight reactions.

I have been asked many times if the size of the swelling gives any indication of the extent of the disease. To this, I always say I do not believe that it does. I have found that we must not overlook the slight swellings, which, in my opinion, are too often

marked "suspects." Really, I believe there should be only two dispositions of cattle: reactor, or healthy. I have followed this up on postmortem work, and in eighteen months have had very few head to be marked, "no visible lesions," which does not mean that the animal was not tuberculous.

Just a word about these so-called "no-lesion" cases. First, this is a misnomer. Such cases should always be spoken of as "no visible lesion" cases. If you will pardon me, I will quote a few lines from a work by Dr. Albert Calmette, of the Pasteur Institute of Paris, a man who is internationally known and accepted as an authority of highest rank on this subject.

In writing of no visible lesions, he states as follows:

"Infection first occurs unobtrusively and remains latent in lymph or blood system for a longer or shorter time and discloses its existence only by conferring upon infected animals the capacity to react to tuberculin."

Further, he says:

"Tuberculin has been accused of having given a false indication because the tubercular lesion is not found. It has been proved long ago, however, that in these circumstances the organs have not been searched with sufficient care. There exists somewhere follicular lesions, or at least a gland containing tubercle bacilli, whose presence can be disclosed by experimental inoculation."

So much for that! There is one phase of the work that seems to me should merit our closest attention, and that is the immediate removal, from contact with healthy cattle, of all reactors, and the slaughter of them, in the least possible time, then the thorough cleaning and disinfection of premises. If every premise was as thoroughly cleaned after finding reactors, as it should be, and as it is after finding a case of root-and-mouth disease, the infection would cease to exist. An old stable with wooden floor, stanchions and mangers, cannot be thoroughly disinfected, and there is no place outside the body that the germ of tuberculosis likes so well, or will live so long in, as a dark, damp, dirty barn. I could tell, from personal experience, of many such stables, the interior woodwork of which should be torn out, and concrete and steel substituted. A building so arranged as to provide an abundance of fresh air and light will make it easier for the owners to clean, and render it safer for cattle.

It would be useless for me to stress the economic importance of the tuberculin test before this intelligent body of veterinarians. The veterinarian is a conservator of human health. Time does not allow me to go into this phase of the question. Suffice to say, however, milk from tuberculous cattle possesses an element of danger for children. Most cities protect their citizens by regu-

lations regarding pasteurization, but it really devolves upon the veterinarian to put forth his best efforts to eradicate this danger.

From the time a herd is placed on the accredited list the owner begins to profit from it. From then on, the owner must assume all responsibility for keeping it clean, and will want, and need, the practitioner's aid in doing this, as well as advice on a multitude of questions that must be answered promptly and accurately to produce results. He needs, and must have, the practitioner to do subsequent testing, as the initial testing by state and government is but the first step in getting and keeping a sound herd. To make this effort worth while, the herd must be tested annually, and kept free from the disease.

The purpose of tuberculosis eradication is to enable the owner to reap a greater reward in operating a clean herd, and create a better market for his dairy products and cattle. Notwithstanding this phase, we believe that the eradication will stand on its merits, its scientific truths, and the economic advantage it holds out to the entire live stock industry.

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### PLAIN PROOF

Wayne is one of the three Indiana counties, now, whose dairy herds have been accredited by the United States government as free from tuberculosis. That is going to count tremendously in the future, when live stock sales are considered.

We have as fine dairy cattle here in Wayne County as can be found almost everywhere. Buyers will come to Wayne County sales, on the strength of the government warrant that all cattle bought here are free from tuberculosis, rather than take a chance by going to some county where there is no such assurance. The government tests mean real, practical insurance. Over in Wabash County, not long ago, to satisfy some dairy farmers who were doubtful, a public test was made, after cattle had been slaughtered. Over 500 dairy cattle, representing nearly 50 well-known herds, were included in the demonstration, and every one of the condemned cattle, on a postmortem examination, showed the clear, unmistakable marks of the lesions of tuberculosis.

Not one of the farmers who witnessed the showing had any further doubts! That sort of proof tells its own story.—

*Richmond (Ind.) Item.*

## A PHARMACODYNAMIC STUDY OF THE ANTHELMINTIC PROPERTIES OF WESTERN OILS OF CHENOPODIUM

By A. RICHARD BLISS, JR., Memphis, Tenn.

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### INTRODUCTION

These investigations were prompted by the facts that (1) the supply of oil of chenopodium ("American oil of wormwood") is inadequate for human and animal medication, and (2) the resulting high price of the "Maryland oil of chenopodium" is consequently preventing the extensive use of the drug in the treatment of domestic animals, a field in which it is much needed<sup>1</sup>.

In 1854 an article by Garrigues<sup>2</sup> described the Southern (U. S.) and the Western (U. S.) chenopodium plants, and accredited the oils distilled from both varieties with equal anthelmintic properties. During the same year, very shortly after the appearance of this article, another paper<sup>3</sup> was published by a second writer protesting against Garrigues' statements concerning the efficacy of the oil distilled from the Western plants ("Western oil of chenopodium"), but offering no proofs of the superiority of the oil distilled from the Southern plants ("Maryland," "Baltimore," or "Southern" oil of chenopodium).

The second article referred to above is probably responsible for the generally accepted opinion that oil of chenopodium, conforming to the requirements of the United States Pharmacopoeia,<sup>4</sup> can be produced only from *Chenopodium ambrosioides*, var. *anthelminticum* cultivated in Carroll County, Maryland. The work of Wirth,<sup>5</sup> on an oil distilled from plants grown at the University of Michigan Botanical Gardens, apparently substantiated this opinion. The conclusion of Wirth and others, that the inferiority of the Western oil of chenopodium was due to a low ascaridol content, was apparently based entirely upon the low specific gravity of the Western oil they had obtained.

Schimmel's reports<sup>6</sup> indicate that ascaridol, which apparently corresponds to the heavier fraction obtained in the distillation of oil of chenopodium, is the part responsible for the anthelmintic properties of the drug. Although this statement has not been proved and no reasons for the conclusion have been stated, it has

been generally accepted. Hall and Hamilton<sup>7</sup> demonstrated that although ascaridol is anthelmintic, it is also a very active gastrointestinal irritant; while the lighter fraction of the oil is more althelmintic and decidedly less irritating. Salant and Nelson<sup>8</sup> found ascaridol 30% more toxic than oil of chenopodium.

The reports of Schimmel<sup>6</sup> and the investigations of Nelson<sup>9</sup> and of Russell<sup>10</sup> indicate that the failure of Wirth and other workers to obtain a satisfactory oil from plants cultivated in the Middle West was probably due to the faulty methods of distillation employed. The work of Konantz<sup>1</sup> substantiates the foregoing statement, for the oils prepared by him from chenopodium plants cultivated in the Middle West meet the U. S. Pharmacopoeial specifications.

Although a considerable number of pharmacodynamic investigations of the anthelmintic properties of oil of chenopodium ("Maryland oil") have been carried out (particularly by Hall, Hamilton, Wigdor, Foster, Wilson, and Salant and co-workers), and while it is probably true that some of the oils used in these investigations were admixtures of the Maryland and the Western oils, up to the present time no pharmacodynamic studies had been made of the pure, unmixed Western oil or of the oil distilled from the wild chenopodium of the Middle Western states.

#### MATERIALS AND METHOD

The writer's pharmacodynamic investigations were carried out on three samples of oil of chenopodium distilled by Konantz.<sup>1</sup> One of the samples was an oil (S/G 0.966\*) distilled from plants which had been shipped from Carroll County, Maryland (referred to in this study as "Maryland oil of chenopodium"); a second was a sample of an oil (S/G 0.970) distilled from plants cultivated in Adams County, Illinois (called "Western oil of chenopodium" in this article); and the third was a sample of an oil (S/G 0.964) derived from cultivated wild wormseed plants found in Adams County, Illinois (the "wild Western oil of chenopodium" hereafter referred to).

Because of the fact that oil of chenopodium in single therapeutic dose has a decidedly higher efficacy against ascarids than is shown by any other anthelmintic, the common ascarid of the dog was used as the test worm in determining the anthelmintic value of the three oils studied. Other varieties of worms found in the experiment animals were disregarded. Hall and Foster<sup>11</sup> and Hall<sup>12,13</sup> established the superiority of oil of chenopodium

\*U. S. P. IX requirement: 0.955 to 0.980.

as an ascaricide in dogs. Their results showed that the oil has no equal for the removal of ascarids, since it will, in the vast majority of cases, remove 100% of these worms present in the dog. Clinical observations have shown that the oil is apparently about as effective, when properly administered, against ascarids in man. Hall and Foster<sup>14</sup> experimentally established its efficacy against ascarids in swine; Hall, Wilson and Wigdor<sup>15</sup> in the horse; and Hall<sup>16</sup> in the cat.

The method employed by the writer was that of Hall and Foster,<sup>16</sup> i. e., the collection of all worms from the feces after the treatment and from the dog postmortem. The standard dose of oil of chenopodium used throughout the investigations was 0.1 cc per kilo, the amount conclusively established by Hall<sup>17</sup> as being capable of removing all ascarids from the dog in the great majority of cases. The apparatus employed was that advocated by Hall<sup>1</sup> for examining feces for evidences of parasitism. The oils were administered in soft, elastic capsules<sup>19</sup> according to the practical dosage recommended by Hall,<sup>20</sup> viz, 5 minims for dogs weighing 10 pounds or less; 10 minims for dogs weighing 10 to 20 pounds; 15 minims for dogs weighing 20 to 30 pounds; not to exceed 20 minims for dogs weighing over 30 pounds. One fluidounce (30 cc) of castor oil was given immediately after the oil of chenopodium. The investigations of Hall and Wigdor<sup>19,20</sup> and of Hall and Hamilton<sup>7</sup> indicate that the administration of castor oil immediately after the oil of chenopodium is of extreme importance, since it is protective and not merely purgative. Oil of chenopodium is decidedly poisonous, constipating, and a gastro-intestinal irritant. Castor oil retards the absorption of the oil of chenopodium, distributes it over a larger surface of the gastro-intestinal mucosa, and promotes elimination. The observations of the writer substantiate the foregoing statements. Salant and Nelson<sup>22</sup> also demonstrated that certain fixed oils are of value in preventing poisoning by oil of chenopodium.

Each experiment dog, housed in a separate, thoroughly cleaned cage, was given no solid food for 24 hours. Early the following morning the oil of chenopodium and the castor oil were administered. No food was given for at least three hours after the drugs. All feces passed during the following five days were carefully examined for ascarids. At the end of the fifth day the animal was killed (shot), and the alimentary tract from the esophagus to anus was slit and examined for ascarids and lesions.

The results of the study are tabulated in tables I, II, III, and IV.

TABLE I—Western Oil of *Chenopodium*

DOG	WT. (KILOS)	OIL CHEN. (MINIMS)	CASTOR OIL (cc)	ASCARIDS IN STOOLS	ASCARIDS POST- MORTEM	DIGEST. TRACT	EFFICACY AGAINST ASCARIDS %
1	10	15	30	6	0	Normal	100
2	13	15	30	10	0	Normal	100
3	13	15	30	7	0	Normal	100
6	16	20	30	9	0	Normal	100
7	15	20	30	18	0	Normal	100
9	6	10	30	11	0	Normal	100
10	12	15	30	4	0	Normal	100
11	11.5	15	30	7	1	Normal	87.5
14	8	10	30	21	0	Normal	100
15	14	15	30	2	0	Normal	100
16	14.5	20	30	8	0	Normal	100
19	7.5	10	30	2	0	Normal	100
21	12	15	30	9	1	Normal	90
23	14.5	20	30	14	0	Sl. Inflam.	100
24	15	20	30	35	0	Normal	100
25	15	20	30	1	0	Sl. Inflam.	100
27	12	15	30	23	0	Normal	100
29	9	10	30	8	0	Normal	100
31	15	20	30	6	0	Normal	100
32	9.5	10	30	2	0	Normal	100
33	12	15	30	10	2	Normal	83
35	16	20	30	29	0	Sl. Inflam.	100
38	6	10	30	5	0	Normal	100
39	8	10	30	16	0	Normal	100

Note 1: Average efficacy against ascarids, 98.35%.

Note 2: Percentage showing slight inflammation, 12.5%.

TABLE II—Wild Western Oil of *Chenopodium*

DOG	WT. (KILOS)	OIL CHEN. (MINIMS)	CASTOR OIL (cc)	ASCARIDS IN STOOLS	ASCARIDS POST- MORTEM	DIGEST. TRACT	EFFICACY AGAINST ASCARIDS %
42	6	10	30	2	0	Normal	100
43	7.75	10	30	8	0	Normal	100
44	10	15	30	3	0	Normal	100
45	16	20	30	18	2	Sl. Inflam.	90
48	15	20	30	4	0	Normal	100
51	8	10	30	16	0	Normal	100
52	10.5	15	30	26	2	Normal	93
54	11.5	15	30	11	0	Normal	100
55	16	20	30	4	0	Sl. Inflam.	100
56	17	20	30	1	0	Normal	100
59	6.5	10	30	8	0	Normal	100
62	6.75	10	30	2	0	Normal	100
64	9.5	10	30	1	0	Normal	100
67	10	15	30	20	0	Sl. Inflam.	100
68	4.5	5	30	6	0	Normal	100
69	6	10	30	5	0	Normal	100
71	13.5	15	30	8	2	Normal	80
72	12	15	30	12	0	Normal	100

Note 1: Average efficacy against ascarids, 97.77%.

Note 2: Percentage showing slight inflammation, 16.66%.

TABLE III—*Maryland Oil of Chenopodium*

DOG	WT. (KILOS)	OIL CHEN. (MINIMS)	CASTOR OIL (cc)	ASCARIDS IN STOOLS	ASCARIDS POST- MORTEM	DIGEST. TRACT	EFFICACY AGAINST ASCARIDS %
73	12	15	30	22	0	Normal	100
74	15	20	30	12	0	Sl. Inflam.	100
77	6	10	30	3	0	Normal	100
79	7.5	10	30	5	0	Normal	100
80	8.5	10	30	16	0	Normal	100
81	10	15	30	8	0	Normal	100
82	16	20	36	6	0	Sl. Inflam.	100
84	15.5	20	30	1	0	Normal	100
86	14.5	20	30	16	2	Sl. Inflam.	90
87	9	10	30	2	0	Normal	100
88	8	10	30	9	0	Normal	100
90	12.5	15	30	6	0	Normal	100
91	11.75	15	30	8	2	Normal	80
92	6	10	30	3	0	Normal	100
94	7	10	30	8	0	Normal	100
95	10	15	30	9	0	Normal	100
96	13.5	15	30	19	0	Normal	100
98	7.5	10	30	3	0	Normal	100
102	12	15	30	2	0	Normal	100
104	15	20	30	30	0	Normal	100

Note 1: Average efficacy against ascarids, 98.5%.

Note 2: Percentage showing slight inflammation, 15%.

TABLE IV—*Comparison of Results with Three Oils*

OIL	DOGS	ASCARIDS IN STOOLS	ASCARIDS POSTMORTEM	PER CENT EFFICACY
Western Oil.....	24	263	4	98.50
Wild Western Oil.....	18	155	6	86.27
Maryland Oil.....	20	188	4	97.91

## SUMMARY

In table I there are 24 dogs with a total of 267 ascarids; an average of 11 plus per dog. Of these worms the treatment with the Western oil of chenopodium removed 263. The treatment was, therefore, 98.50% effective against ascarids, a value extremely close to the mathematical average efficacy in note 1, table I.

There are 18 dogs in table II with a total of 161 ascarids; an average of 9- per dog. The treatment with the wild western oil of chenopodium removed 155 worms, and was, therefore, 96.27% effective, which is a little less than the mathematical average efficacy in note 1, table II.

Table III shows 20 dogs with a total of 192 ascarids; an average of 9.6 per dog. The Maryland oil of chenopodium treatment removed 188 of the parasites, and was consequently 97.91%

effective, a small fraction less than the mathematical average efficacy in note 1, table III.

The foregoing figures are tabulated in table IV.

The average efficacy of the three samples of oil was, therefore, 97.56%.

Examination of the digestive tracts of the animals showed a slight degree of inflammation in three dogs of each of the three series, or a total of 9 animals out of 62. This small percentage (14.5%) and the very mild degree of inflammation found indicates that this possible phase of the action of the oils of chenopodium, in the dosage employed, may be disregarded in the cases of all three oils unless the animal already shows a gastro-enteritis. It is interesting to note that practically all the cases showing inflammation were among the heavier dogs which had received a larger dose of the oil. The reader is referred to Hall's study<sup>22</sup> of the lesions due to agents used in killing experiment dogs in anthelmintic investigations.

#### CONCLUSIONS

This study has shown that oil of chenopodium properly distilled from plants cultivated in the Middle Western states is as efficacious against ascarids in dogs as the Maryland oil of chenopodium. On the basis of the experiments with dogs the writer ventures to state that these findings apply also to man.

The writer is indebted to Doctor W. A. Konantz, of Quincy, Ill., for the samples of the oils used in this study; and also to Miss Pearl Waddell, A. B., and to C. H. Menge, A. B., for valuable technical assistance rendered during the investigations.

#### BIBLIOGRAPHY:

- <sup>1</sup>Konantz: Jour. Amer. Ph. Asso., xiii (1924), 3, pp. 201-205.
- <sup>2</sup>Garrigues: Amer. Jour. Pharm., xxv (1854), pp. 404-408.
- <sup>3</sup>Anon: Amer. Jour. Pharm., xxvi (1854), p. 503.
- <sup>4</sup>U. S. P. IX, p. 290.
- <sup>5</sup>Wirth: Jour. Amer. Ph. Asso., ix (1920), p. 127.
- <sup>6</sup>Schimmel & Co.: Semi-Ann. Rpt., Apr. 1908, p. 109.
- <sup>7</sup>Hall & Hamilton: Jour. Pharm. & Exp. Ther., ix (1918), 3, pp. 231-261.
- <sup>8</sup>Salant & Nelson: Amer. Jour. Phys., xxxvi (1915), p. 440.
- <sup>9</sup>Nelson: Jour. Amer. Chem. Soc., xlii (1920), p. 1204.
- <sup>10</sup>Russell: Jour. Amer. Ph. Asso., xi (1922), p. 255.
- <sup>11</sup>Hall & Foster: Jour. Agr. Res., xii (1918), 7, pp. 397-447.
- <sup>12</sup>Hall: Jour. Amer. Vet. Med. Asso., lv (1919), n. s. 8 (4), pp. 416-423.
- <sup>13</sup>Hall: Jour. Amer. Vet. Med. Asso., lv (1919), n. s. 8 (1), pp. 24-45.
- <sup>14</sup>Hall & Foster: Jour. Amer. Vet. Med. Asso., lvi (1919), n. s. 9 (1), pp. 59-70.
- <sup>15</sup>Hall, Wilson & Wigdor: Jour. Amer. Vet. Med. Asso., lv (1919), n. s. 8 (5), pp. 543-549.
- <sup>16</sup>Hall & Foster: Jour. Amer. Med. Asso., lxvii (1917), p. 1916.
- <sup>17</sup>Hall: Jour. Amer. Vet. Med. Asso., lii (1917), n. s. 5 (3), p. 342.
- <sup>18</sup>Hall: Jour. Lab. & Clin. Med., ii (1917), 5, pp. 347-353.
- <sup>19</sup>Hall & Wigdor: Jour. Amer. Vet. Med. Asso., lvi (1919), n. s. 9 (2), pp. 169-177.
- <sup>20</sup>Hall: Jour. Amer. Vet. Med. Asso., lv (1919), n. s. 8 (1), p. 24.
- <sup>21</sup>Hall & Wigdor: Jour. Amer. Vet. Med. Asso., lvi (1920), n. s. 9 (4), pp. 394-399.
- <sup>22</sup>Salant & Nelson: Amer. Jour. Phys., xxxvi (1915), 4, pp. 444-463.
- <sup>23</sup>Hall: Amer. Jour. Vet. Med., xiii (1918), 8, pp. 383-387.

## SOME VETERINARY REMINISCENCES

### VII. Out After Antiques

*By N. S. MAYO, Chicago, Ill.*

A short time before I went to Connecticut the agricultural and dairy interests of the state had been all "het up" over the compulsory tuberculin testing of cattle. The situation was so acute that it had played an important part in a state election, with the result that the office of State Veterinarian had been abolished and provision was made for a State Cattle Commissioner, who should be a practical farmer and have been owner of a farm for several years previous to his appointment.

Soon after reaching the College a farmer came to see me and after visiting some time and discussing bovine tuberculosis he informed me that he was the State Cattle Commissioner, that he knew nothing about tuberculosis but he wanted me to do the technical work for him and he would take care of the political end of the job. Mr. S. was a diplomat and a good politician and the training I got from him in handling people has been of great value to me. When we started out to do the state work the mention of tuberculin was likely to start a fight. In a few months we were testing the cattle of some who had been the strongest opponents of the tuberculin test and they felt that we were doing them a great favor. A tactful consideration of the other fellow's situation and feelings is an important factor, not only in state live stock sanitary work, but in practically all the relations of life.

A New England interest or industry that was new to me was collecting antiques. Several of the wives of the college professors were active collectors of old furniture, china, pewter porringers, plates, etc. One of the ladies asked me to be on the watch for old things as I visited the various farms in practice. One day, at a farm way up in the hills, I noticed that the hired man, fixing something around the barn, had an old metal plate the shape of a soup plate filled with nails. The plate was corroded and looked like pewter but on scratching I found it was copper. Knowing that copper antedated pewter in the arts I felt that here was a *real* antique and a rare treasure. I said to the farmer that I had never seen an antique copper plate before and he said he never had and he was born and raised on the farm. I

asked him what he would sell it for and he said it belonged to the hired man who had found it. I asked the hired man what he would take for it, and, Yankee fashion, he replied, "What'll ye give." I started low and offered a half-dollar and he said, "It's yours, I didn't expect to get more'n ten cents for it." When I got home with my antique copper plate I showed it with great pride to an authority on antiques. He gave one glance at my plate and said, "It looks to me like the copper bottom from an old tin teakettle." Great Scott, it was! My interest in antiques evaporated right there.

The summers and autumns in the hills of New England were delightful. In the fall it was a great pleasure to take the children on trips after chestnuts and hickory nuts, or with my dog and gun I enjoyed tramping over the hills and through the birches after partridges, woodcock and quail.

One can not praise the New England winters. They came early and lasted until way into summer almost. It did not get so very cold, but there were heavy snow storms. In the West, during a severe winter storm, everyone's thoughts were: "It's a bad storm for the stock." In New England the thoughts were with those who "go down to the sea in ships" and the common expression was: "It's a bad night at sea."

After a big snow storm, came the interesting process of "breaking out" the roads. I can still see a couple of yokes of oxen, hitched to a New England sled as they came puffing, steaming, and wallowing through the deep snow and still hear the whoops and yells of the drivers reverberating in the still winter air.

In addition to my college work and assisting the Cattle Commissioner I did a good deal of Grange and Farmers' Institute work. This took me to all parts of the state and enabled me to meet and know many fine people. The people of New England are more conservative in making friends than are the Westerners, but once your friend they *stay* and you can count on them to the end. In 1901 I got into a controversy with the president of the College and was dismissed. I was offered and accepted my old position in the Kansas State Agricultural College. The following Christmas my good old Connecticut Yankee friends sent me a beautiful, diamond-studded watch-charm as a remembrance, but this was not needed to make a large place in my heart for the many loyal friends in quaint, conservative, old New England.

## PRACTICAL POINTS IN THE USE OF SALTS<sup>1</sup>

By LOUIS A. KLEIN, *Philadelphia, Pa.*

*School of Veterinary Medicine, University of Pennsylvania*

Sodium sulphate and magnesium sulphate act as cathartics in two ways. When present in the intestinal contents in dilute solution, they retard the absorption of fluid from the intestines, and the volume and weight of the fluid stimulates intestinal peristalsis, and catharsis results, the fecal discharges being more or less fluid. When a larger quantity of the salt is present in the intestines, forming a more concentrated solution, fluid is drawn from the capillaries and lymph spaces, in the intestinal wall, into the lumen of the bowel, and the resulting increase in the volume and weight of the intestinal contents stimulates peristalsis and produces catharsis. The fluid withdrawn in this way from the blood and lymph is replaced by absorption of fluid from any of the tissues or cavities in which it may be present in excess. By this action, dropsical collections, serous effusions, and inflammatory exudates are absorbed, and metabolic and bacterial products in solution in the blood are eliminated.

Therefore, when sodium sulphate or magnesium sulphate is used to bring about an absorption of exudates or transudates or to eliminate abnormal substances from the blood, it should be given in concentrated form, being dissolved in just enough water to obtain a solution. On the other hand, in constipation, fever, and other conditions in which the secretions are scanty, the salt should be given in dilute solution, and the patient should be encouraged to drink plenty of water. If vomiting follows the administration of a concentrated solution to the dog, it should be repeated in more diluted form.

Sodium sulphate and magnesium sulphate in solution not only themselves resist absorption from the intestines, but also retard the absorption of any substance which may be in solution with either of them. Consequently, the local action of a drug on the intestinal wall or contents may be prolonged and its absorption delayed if it can be dissolved in a dilute solution of sodium sulphate or magnesium sulphate. This same property of resisting absorption also makes a dilute solution of one of these salts

<sup>1</sup>Reprinted from Univ. of Pa. Veterinary Extension Quarterly, XXV, 3.

more efficient in softening fecal or intestinal impactions when injected per rectum, than water or normal saline solution, because the latter are rapidly absorbed. Normal saline solution is to be preferred for rectal injections when it is desired to introduce fluid into the blood, as after severe hemorrhage, but a dilute solution of sodium or magnesium sulphate will act more efficiently in softening dry masses in the lumen of the bowel.

### **"TUBERCULOUS" PUBLICITY**

The subject of tuberculosis eradication has been receiving a great deal of newspaper publicity during the past year, especially throughout the Central West. Many rather amusing headings have been noted in connection with articles on the subject, more particularly in the papers published in the smaller towns. The way in which the words tuberculosis, tubercular, tuberculous, and tuberculin are being kicked around is something scandalous, as will be seen from a glance at the following captions selected from several hundred newspaper clippings:

**TUBERCULIN CATTLE**

**CATTLE DOCTOR IS APPOINTED**

**NOTICE OF BOVINE T. B. MEETING**

**ATTEND TUBERCULAR DEMONSTRATION**

**TUBERCULOSIS CATTLE ARE NUMEROUS**

**WABASH COUNTY WANTS INSPECTOR FOR HERBS**

**TUBERCULOSIS DAIRY HERD CONDEMNED AT  
DEPUE**

**SELECTING TUBERCULAR VETERINARIAN FOR  
COUNTY**

**DR. VERNON LYONS IS BOVINE VETERINARIAN  
FOR TAZEWELL COUNTY**

Further perusal of the clipping from Wabash County (Ind.) revealed the information that inspectors were wanted for the "herds" in that county rather than for the "herbs." The clippings relative to the appointments of "cattle doctor" and "bovine veterinarian" did not come from the same locality, but we might venture the opinion that these titles are synonymous, with all due respect to the appointees in each case.

## DESCRIPTION OF A COURSING MEET

*By EDWIN J. FRICK, Manhattan, Kan.*

The National Coursing Association held its fall meet at Chapman, Kansas, October 10 to 21, 1924, inclusive.

Dog racing, commonly known as coursing, is fast becoming the popular sport of an ever-increasing number of clean sportsmen throughout the United States. Its popularity is attested by the fact that there were entries and owners present at the meet from California, Texas, New York, Massachusetts, Florida, Ohio, Pennsylvania, Illinois, Michigan, Minnesota, Wisconsin, North and South Dakota, Nebraska, all the central states, and also Ireland, England, and Scotland.

Prize money aggregating \$12,000.00, with a \$200.00 silver cup and another silver cup worth \$100.00, were awarded the winners. The meet was held on the edge of town, in a park 500 yards long and 200 yards wide, fenced off with burlap. Some five hundred jack rabbits, trained to dash from one end of the field to their quarters at the other end, were used.

A man known as the slipper holds the two contesting greyhounds on a special leash that frees both dogs at once. These dogs are hardened and finished for racing, weeks before the meet, and are wiped, sponged, blanketed, and cared for similarly to our best race horses. Special care is given to the feet, to toughen and strengthen the foot pads. A red or a white woolen collar is put on each dog just before the race. This identifies the dog and he is known as "Red" and the other dog as "White," regardless of body color. A judge on horseback, a timer, and a clerk stand half-way down the field and the race is about to begin.

A long-eared, hopping jack rabbit is freed from the run beside the two ready, straining speed-hounds, when the jack has a good 150-foot head-start the leash is snapped, the dogs freed together and away they start, neck and neck, after the rabbit. The gap between the rabbit and dogs closes. The "White" dog is ahead, he snaps at the rabbit but, a quick dodge and turn and the rabbit is safe—for a second. Again and again the dogs turn the rabbit. Finally the "Red" dog catches the rabbit in midair and scores a kill. Each time the hare is turned scores for the dog that did it and a final point is made by the kill. The judge waves a white

flag; score, 7 to 5, favor of "White." Tomorrow "White" will run against another winner and so on until one dog, by process of elimination, stands supreme.

Sometimes the rabbit makes a speedy trip to the quarters and safety hole at the other end of the field. Occasionally a good-dodging rabbit runs for more than two minutes and unless relief dogs are turned in the running greyhounds may suffer heart collapse. Such was the case of the running to death of Golden Hawke, because the time limit was not observed.

The races are grouped in the following classes: The National Futurity Stake had 523 entries, with 248 dogs to start. The National All-Age Stake had 90 starters. The National Consolation Stake had 124 starters. Special Puppy Stake with 16 starters. National Purse Stake with 45 starters. National Plate Stake with 23 starters.

Coursing is a clean, enjoyable sport and many towns have their local coursing clubs. If you have never seen a good coursing meet you have missed an interesting time.

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#### FOR CLOSER COOPERATION

At a meeting of the Kingston-on-Thames Division of the British Medical Association, held at the Surbiton Hospital, November 11, 1924, Sir Frederick Hobday, honorary veterinary surgeon to the King and president of the Comparative Medicine Section of the Royal Society of Medicine, read a paper in which he took as his subject the value of collaboration between the medical and veterinary professions for the eradication of anthrax and tuberculosis, using rabies as an example of the value of stamping out a disease common among animals and incidentally putting an end to hydrophobia in man. Glanders was similarly suggested as being another disease which might well be relegated to the category of those diseases which appear only in textbooks.

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#### WINS OXFORD HONOR

Announcement has been made that Owen B. Rhoads, of Lansdowne, Pa., has been selected as a Rhodes scholar from Pennsylvania, at Oxford University. Mr. Rhoads is the son of Dr. Warren L. Rhoads (Am. V. C. '95), a prominent veterinarian of the Keystone state. It is believed that this is the first time that the son of a veterinarian has been honored with appointment as a Rhodes scholar.

## **CLINICAL AND CASE REPORT**

(Practitioners and others are invited to contribute to this department reports of unusual and interesting cases which may be helpful to others in the profession.)

### **SO CALLED SALMON POISONING OF DOGS** **Preliminary Report**

*By C. R. DONHAM, Corvallis, Ore.*

*Department of Veterinary Medicine, Oregon Agricultural College  
and Experiment Station*

In the Pacific Northwest, there is a disease of dogs which is generally conceded to be caused by eating salmon. This so-called salmon poisoning of dogs is of appreciable economic importance to the ranch owners of the coast region.

Live stock is an important factor on most of these ranches and the stock dog is a valuable part of the rancher's equipment. A small percentage of the dogs recover from an attack of this disease and are apparently resistant or immune to succeeding attacks. Such dogs have a relatively high monetary value. From a scientific standpoint this problem has several interesting and important phases. This disease is very common along the coasts of Oregon and Washington but is rare in British Columbia and is not found on the coast of Alaska.

There has been some diversity of opinion among veterinarians and others of the Pacific Northwest as to whether or not salmon is actually the cause of a dog disease. Therefore, the primary object of this work was to determine whether or not eating salmon is the cause of a disease of dogs. It has been demonstrated that dogs show symptoms after eating salmon. Some other interesting phases of this problem have been briefly studied. None of the material presented herein is intended to be accepted as final because the number of animals used in this experiment is not sufficient for the author to give out information that is conclusive.

#### **KINDS OF FISH**

The statement, that salmon will cause the disease, is usually accepted. It has been quite definitely demonstrated that salmon which has been caught in salt water will not produce symptoms, when fed either raw or cooked. At certain seasons of the year,

the mature salmon leave the ocean and move into the fresh water streams to spawn. At this period in the life cycle, the tissue of salmon undergoes degenerative processes which result in a change of color of the skin in localized areas. These fish are commonly known as "sore-back" salmon. They die soon after spawning and can be found lying along the banks of the tide-water streams. Consequently, this is the type of fish most commonly eaten by the dog. "Sore-back" salmon have been fed to dogs and symptoms produced. Dogs will eat these fish ravenously and the symptoms and manner of death seem to indicate that the cause is not one of the food poisonings.

There are many other varieties of fish, found in the mountain streams, which are frequently reported as having produced the same symptoms. As yet nothing has been done to prove or disprove these reports. It is also not known whether the young salmon which have not yet reached salt water will cause the disease.

#### CAUSE

An intestinal trematode has been found in large numbers which, it is believed, will prove to be the exciting cause. This parasite is, without question, a fluke but has not yet been identified. It is a small parasite, barely visible to the naked eye. In addition to this, a microscopic cyst has been found in the muscle of "sore-back" salmon. When these fish were fed to dogs typical symptoms of so-called salmon poisoning were produced. The author is aware that there may not be any relationship between the two but it is considered logical to infer that this cyst may be one of the intermediate forms of the mature fluke that has been found in the intestines of the affected dogs. Further work with the life cycle of this parasite will be attempted.

#### SYMPTOMS

The symptoms observed in dogs used in this experiment are quite typical; yet a tentative diagnosis of dog distemper was made in the first few cases. It is highly probable that these two conditions have frequently been confused. This would account, in part, for the differences in opinion regarding salmon as a cause of symptoms and death in dogs.

The symptoms of so-called salmon poisoning do not appear until six to ten days after the dog has eaten the salmon. The first symptom noted is a partial or complete loss of appetite. A few hours later there is an elevation of body temperature,

rapidly rising to about 104° to 106° F. The animal is then listless, remains in a recumbent position, is difficult to move, drinks large quantities of water but refuses feed. About the time the temperature begins to rise an edema of the face develops. This seems to be the most constant and valuable symptom for diagnosis. It is usually most marked around the eyes and may be progressive and involve all of the face and throat regions. There is sometimes a discharge of thick, creamy pus from the eyes. These symptoms increase in intensity for about 48 to 72 hours. After the crisis is reached the temperature usually begins to drop and 24 hours later is down to normal or subnormal. At this time there is often a diarrhea, the feces being watery and tinged with blood. After diarrhea develops extreme weakness is noted. This weakness might be confused with the paralysis frequently seen in the latter stages of dog distemper. The animal may rally for a few hours but in a majority of cases will die in four to eight days after the first symptoms were observed.

#### AUTOPSY

The stomach is usually normal except that it may contain blood-tinged bile and a large number of flukes, both of which evidently have been regurgitated from the duodenum. There is a marked hemorrhagic inflammation of the intestinal tract which is much more pronounced in the rectum and terminal portion of the large bowel. There is usually blood in the lumen of the rectum. Great numbers of flukes and their eggs have been found in the intestinal tract, particularly in the colon and rectum.

No lesions have been found in any parts of the body except those mentioned.

#### CONTROL

No attempt has been made to find a method of treating these dogs. Dog owners frequently make a practice of feeding salmon to the puppies, hoping to be able to raise some that will not again develop the disease. It has not yet been proven that there is a form of immunity or resistance that will protect dogs. This popular opinion is quite generally held and will probably prove to be well founded.

Experimental work on this problem will be continued and it is hoped that more information will be available at some future date.

## REVIEWS

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**MANUAL OF NORMAL HISTOLOGY AND ORGANOGRAPHY.** Charles Hill, Ph.D., M.D., President and Professor of Anatomy, Chicago Medical School. 5th edition, revised. 12mo, 504 pages, with 312 illustrations and plates vi in colors. W. B. Saunders Co., Philadelphia and London, 1924.

Many years of teaching experience have equipped Dr. Hill to produce a book that equally well meets the requirements of student and instructor. Completeness has not been sacrificed at the expense of conciseness.

The entire field of histology is covered, beginning with the cell, the various tissues, organs, and regions, and ending with laboratory directions for the preparation, fixing and staining of the materials to be studied.

The parts devoted to embryology in previous editions have been amplified. The new nomenclature, particularly that of the nervous system, has been brought up to date. The latest edition of this well-known text merits a warm reception on the part of student and teacher.

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**POULTRY CULTURE SANITATION AND HYGIENE.** B. F. Kaupp, B.S., M.S., D.V.M. Third edition. 663 pages. W. B. Saunders Co., Philadelphia and London. Price, \$4.00.

After comments on the magnitude of the poultry industry, a glossary of terms used in the text is given, followed by a classification of the various breeds, their histories, problems in mating, utility problems, including egg-laying breeds, meat types, and dual purpose fowls. Physical characters indicating these qualities, Mendelianism as applied to poultry breeding, and finally the farm poultry problems are discussed at length. Sanitation and hygiene is followed by a chapter on poultry house construction and the construction of poultry house equipment.

After a brief discussion of non-contagious and contagious poultry diseases, there is taken up the problem of nutrition, laying special stress on the newer thoughts of poultry nutrition, with special reference to vitamins, minerals, carbohydrates, fats and oils, and the value of the different qualities of protein feeds. The acid-base studies are given, and tables of digestibility of

feeds, based on digestion trials with poultry, and finally the effects upon the health of the fowl of the various feed-stuffs.

The effects of extended feeding hours on egg production are explained, with special reference to production when eggs are at a high price. Various feeds and feed mixture are discussed, with instructions for feeding and rearing of chicks, laying and breeding birds, and fattening fowls. The marketing of poultry and eggs, with special reference to refrigeration and distribution, is treated. A thorough discussion of natural and artificial incubation and brooding, both in small lots and on a commercial scale, is gone into. Caponizing and rearing of capons, with a chapter on poultry business management, completes the book. Veterinarians will find much of interest in this text.

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## ABSTRACTS

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HJERNE-OG RYGMARVS-LIDELSE HOS KVEGET (Cerebrospinal Meningitis in Cattle). Norges Offisielle Statistik, VII, 90. Veterinaervesenet og Kjøttkontrollen, Kristiania, 1921, p. 15.

District Veterinarians A. Kragerud and E. Gunderson report the finding of thirty-five and ten cases respectively of an acute cerebrospinal meningitis in cattle. Five affected animals died, the others recovered in about two weeks. The disease appeared sporadically scattered over considerable territory. Usually only one, two, or three animals have become affected in the same herd. The affected animals have all been adults. A. Kragerud reports that the same disease was observed about twenty years previously. Both seasons, during which this disease occurred, were very dry. Symptoms: Indigestion to begin with, then dullness and a desire for lying down, increased reflex irritability with spasms at times or periodic unrest. There is also fever. If the animals are in the recumbent position they will either hold the neck stretched out rigidly or strongly bent to one side. They grind their teeth and show spasms of the neck. In some cases the onset is marked by a staring expression and a characteristic nervous excitement. By bending the neck of affected animals E. Gundersen caused the animals to fall to the ground, showing severe spasms. The cause is unknown.

H. J. S.

**BLODURIN (HEMOGLOBINURIA).** Norges Offisielle Statistik, VII, 90. Veterinaervesenet og Kjøttkontrollen, Kristiania, 1921, p. 12.

The unusually dry season is, in the opinion of most veterinarians, responsible for the decrease in piroplasmic hemoglobinuria, because a dry season checks the reproduction of the insects which act as intermediate hosts.

While piroplasmic hemoglobinuria has decreased, another type of hemoglobinuria has made its appearance and is especially prevalent in dry seasons. This disease occurs quite regularly fourteen days after calving, mostly in the fall and early winter. The disease is often fatal in older animals while younger ones in good condition show a greater degree of resistance. Good milkers seem to be especially subject to this disease, hence the economic losses have been great. The urine is dark and foamy and the genital mucosa waxy-yellow. This disease does not, as does piroplasmic hemoglobinuria, yield to treatment with trypan-blue. One veterinarian reports encouraging results from the use of quinin chlorid. He uses twelve grams of quinin chlorid and fifteen grams of iron sulphate for one dose, at intervals of ten hours.

H. J. S.

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#### THE McLEAN COUNTY SYSTEM

At an examination given recently by one of our state boards of veterinary medical examiners the question was asked: What is the McLean County system of swine sanitation? It is reported that one applicant who was being examined apparently had never heard of or did not know anything about the subject. For the benefit of those who are not yet acquainted with the essentials of this new plan, the following outline is quoted from a recent release of the United States Department of Agriculture:

"The pigs are farrowed in pens that have been thoroughly cleaned with lye and boiling water, and supplied with clean bedding. The sows before being put in the clean pens for farrowing are scrubbed with soap and warm water to free them of dirt which may contain eggs of roundworms and other germs likely to be abundant in the soil of permanent hog lots. Later the sows and litter are hauled (not driven) to clean pasture, preferably legume pasture, which has not been used for hogs since cultivation. Until they are taken to pasture the sows and pigs are kept strictly in their clean quarters, and until the pigs are at least four months old they are kept on pasture entirely away from the permanent hog lot. Pigs started this way are protected from the danger of serious infection with worms and hog-lot diseases and get a strong advantage over those that must take their chances with the ever-present pests. Experience has shown that the practice pays big dividends."

## COMMUNICATIONS

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### RABIES IN IOWA

TO THE EDITOR

The state of Iowa has been visited this year with a very severe outbreak of rabies. Although at first confined to a few centers in southeastern Iowa, specimens of animals believed to have been infected, coming from all parts of the state, would indicate that the disease is now general in Iowa. Dr. Don M. Griswold, state epidemiologist and director of the State Bacteriological Laboratories at Iowa City, advocates the destruction of all unlicensed dogs and increasing the license fee to include anti-rabic vaccination. He cautions against considering it merely a disease of animals, emphasizing that it is a menace to human beings in affected communities. Four persons have succumbed to the disease this year and over one hundred are now taking the Pasteur treatment at Iowa City, with many others receiving the treatment from their family physicians. Persons of zoophilic sentiments are opposing quarantine measures being adopted by many towns in the affected areas. Other agencies are discounting and discrediting the news as "newspaper talk", but there continues to be a great deal of helpful publicity to forewarn and forearm the public.

GRANT B. MUNGER.

Cedar Rapids, Iowa, January 5, 1925.

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### ALUM IN LAMINITIS

TO THE EDITOR:

In reply to the inquiry relative to the use of alum, in the treatment of laminitis, by the modern veterinarian, I beg to state that this agent seems to retain its popularity, and there seems to be no doubt whatever that it has considerable curative value in laminitis of *gastro-intestinal* origin. Abundance of clinical evidence has accumulated, during the last fifteen years, to confirm the observations of Douglass. Conversely, however, it has been observed by many experienced practitioners that this agent is worthless in cases of laminitis wherein there is no digestive disorder, as in traumatic laminitis, weight-bearing laminitis, parturient laminitis, etc.

The fact that the exponents of the alum treatment are those who restrict its use to the dietetic form—founder proper—seems to confirm the theory that alum exerts some influence on the toxemia. Whether this influence is that of controlling the elaboration of toxins, neutralizing toxins, or inhibiting absorption is speculative, of course, but that alum does have some effect is borne out by ample clinical observations.

In short, the parenteral administration of alum would have no influence on a purely local trouble in the foot while, on the other hand, there are good reasons to believe that it does interrupt the activity of the intestinal toxic hot-bed that causes founder. Anyway, as Douglass says, "It cures founder."

I am therefore not inclined to brand the alum treatment of founder as entirely empirical, since the supposed therapeutic action is not much more "supposed" than any of the parenterally administered drugs.

L. A. MERILLAT.

Orrville, Ohio, December 23, 1924.

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#### A GLIMPSE OF OUR CONVENTION CITY



Portland, Oregon, from the air.

## ARMY VETERINARY SERVICE

### CHANGES RELATIVE TO VETERINARY OFFICERS

#### Regular Army

Captain Homer Johnson's death from pneumonia reported from Fort Bliss, Texas, December 14, 1924.

Captain R. A. Kelser has been relieved from duty at the Army Medical School and directed to sail for Philippine Islands from New York City on March 4, 1925, for duty with Medical Department Tropical Research Board.

Major Herbert S. Williams reported for duty as Attending Veterinarian Washington, D. C., on December 1, 1924.

#### Veterinary Reserve Corps

##### *Additional Reserve Officers*

###### Lieutenant Colonel:

Cook, William Burgess . . . . . 202 Riverside Drive, New York, N. Y.

###### Captain:

Adamson, George Vest . . . . . 319 W. Houston St., Sherman, Texas.

###### First Lieutenant:

Miller, Ezra William . . . . . 22 N. Braddock St., Winchester, Va.

###### Second Lieutenants:

Burlington, Irving Oleth . . . . . 427 Exchange Bldg., S. St. Paul, Minn.

Sullivan, Laten Ray . . . . . McMinnville, Tenn.

#### CHANGES IN STATUS

##### *Promotions*

McCord, Ralph Bemus, 12 Grant Street, North East, Pa., promoted to Major, Vet-ORC.

Armstrong, Herbert Leonard, P. O. Box 885, Huntington, W. Va., promoted to Captain, Vet-ORC.

Graves, Fred Wray, Wolcott, Ind., promoted to Captain, Vet-ORC.

Hart, Charles Henry, P. O. Box 533, Wharton, Texas, promoted to Captain, Vet-ORC.

Montgomery, Rollo Smith, 206 E. Main Cross St., Taylorville, Ill., promoted to Captain Vet-ORC.

Smith, Benj. Harrison, 214 S. 2nd Street, Yakima, Washington, promoted to 1st Lieut. Vet-ORC.

## INDIANA NATIONAL GUARD

For the accompanying photograph, we are indebted to Capt. Howard M. Hamilton, commanding veterinarian of the 113th Veterinary Company of the 113th Medical Regiment, which spent two weeks very profitably and enjoyably during the camp training period of the 38th Division, Indiana National Guard, at Camp Knox, Ky. The officers standing in front of the collecting station of the 113th Veterinary Company are: Capt. Lloyd M. Friedline, in command of the Company; Lt. Howard M. Hamilton, junior officer of the company; and Lt. Phillip Forsberg, veterinarian for the 113th Engineers.

Recently, Capt. Friedline was promoted to the rank of major and assigned to the official staff as 38th Division Veterinarian. Lt. Hamilton was promoted to the rank of captain, in command of the 113th Veterinary Company, located at Jonesboro, Ind. Dr. Roscoe Hyde, of Hartford City, Ind., has been appointed



AT CAMP KNOX

Left to right: Capt. Friedline, Lt. Lamilton and "Rowdy," Lt. Forsberg.

captain and junior officer and assigned to the 113th Veterinary Company. This company was enlisted by Capt. Friedline, in February, 1923, as the first organized and equipped veterinary company of the National Guard in the United States. The company has a minimum strength of 26 enlisted men and two officers.

#### BRITISH NATIONAL VETERINARY ASSOCIATION

The *British Medical Journal* for September 13, 1924, devotes an entire page to the proceedings of the above association, because of "the fact that the study of the pathology and even the therapeutics of disease in domestic mammals can throw light on questions in which the medical profession is closely concerned." The subjects reviewed in the *British Medical Journal* are: anaerobic infections in animals, canine distemper, nutrition and disease, and the genetical aspects of sterility.

It would appear that in England they are paying more attention to the inter-relation of human and animal diseases than in other countries, and we would suggest a careful consideration of this subject by the editors of American medical and veterinary journals.

N. S. M.

## **AMERICAN VETERINARY MEDICAL ASSOCIATION**

### **Report of Resident Secretary for Brazil, 1924**

Your secretary regrets to report that he has been unable to induce any qualified veterinarians in Brazil to apply for membership in our Association. There are two principal reasons for our failure: first, there are comparatively few to solicit; second, the "cambio" (rate of exchange) is very much against Brazil at present.

Owing to another recent revolutionary outbreak among the Federal soldiers quartered at Sao Paulo, the country's money has again taken another drop, and at present writing it requires about three times as much of their money to buy one dollar as it does in normal times.

On the other hand, for any American who has faith in this country and has a few spare dollars to invest—or cares to go sight-seeing here—he will find this an excellent opportunity to get a great deal for his money.

#### **VETERINARY PRACTICE IN BRAZIL**

There are few, if any, veterinarians in this country who depend upon practice alone for a livelihood—and in most if not all sections of the country it would be "poor diggings" for some time yet. However, there are in a number of the larger towns and cities several government veterinarians who augment their salaries somewhat by private practice, principally among dogs, and pet animals in general.

Owing to conditions existing here, such as the vastness of the country with comparatively few inhabitants, many herds remain more or less isolated and free from many of the infectious diseases. Few animals are grain-fed and few hard worked, hence there are few dietetic troubles. Therefore, as yet, there is not a big demand for practicing veterinarians.

#### **GOVERNMENT VETERINARY SERVICE**

The veterinary service, both Federal and in the few states which have a state force, are under their respective animal industry departments. The Federal Bureau maintains a group of divisions in the Federal District, and others, in some of the states, mostly duplicates of the former.

The divisions of the Bureau in the Federal District are:

- A. Office of General Director

- B. Animal Husbandry (with a chief, may be either physician or veterinarian).
- C. Enzootics and Epizootics (with a chief—physician or veterinarian).
- D. Meat and Meat Products (with a chief—physician or veterinarian).
- E. Milk and Milk Products (with a chief, must be microscopist).
- F. Cattle Markets (with a chief—physician or veterinarian).
- G. Business Office of the Bureau.
- H. Office of Doorkeeper, Messenger, etc.
- I. Agrostology (with a chief—physician or veterinarian).
- J. Veterinary Experiment Station (with director—bacteriologist).
- K. Disembarking and Quarantine Station (with a chief—physician or veterinarian).
- L. Poultry Experiment Station (with a chief—agriculturist or veterinarian).

With few exceptions, one or more veterinarians are provided for in each of the above divisions. All the substitutions now being made are by civil service examination, but a veterinary degree is not a prerequisite.

#### SOME DISEASES COMMON TO BRAZIL

Despite some of the natural barriers to the spread of infectious diseases, many of these—and parasitic diseases as well—are by no means unknown entities.

The writer can perhaps do no better than to give, with few modifications, the list of diseases, as they appeared in the recent report of the first National Congress of Veterinary Medicine in Brazil, as being worthy of consideration and study by said congress. The diseases existing or having existed in the country are:

- (a) Verminoses, principally stomach, hook and nodular worms of ruminants and lung, whip and kindey worms of swine.  
*Cysticercus cellulosae* is also very prevalent in swine.
- (b) Ascariasis, mainly in hogs.
- (c) Amebiasis.
- (d) Coccidiosis of cattle, poultry and rabbits.
- (e) Babesioses—tick fevers:
  - piroplasmoses
  - anaplasmosesmalaria (piroplasmosis) of horses and of dogs has been reported.

- (f) Spirillosis of spirochaetosis in fowls.
- (g) Trypanosomiases:
  - dourine
  - mal de caderas.
- (h) Actinomycosis.
- (i) Strangles of horses and mules.
- (j) Granular vaginitis.
- (k) Mastitis.
- (l) Infectious pneumonia of swine.
- (m) Hemorrhagic septicemia of cattle.
- (n) Hemorrhagic septicemia of swine.
- (b) Fowl cholera.
- (p) Anthrax
- (q) Glanders.
- (r) Tuberculosis, cattle and hogs.
- (s) Pseudo-tuberculosis.
- (t) Infectious pneumo-enteritis (see comments below).
- (u) Tetanus.
- (v) Symptomatic anthrax.
- (w) Malignant edema.
- (x) Rinderpest (has not reappeared in the country since its extermination in 1921.) See Jour. A. V. M. A., lx (1921), n. s. 13 (2), p. 177.
- (aa) Foot-and-mouth disease (see comments below).
- (bb) Hog cholera (during five years sojourn in Brazil the writer has not seen a typical case of hog cholera and doubts its existence here. However, it is present without doubt in Argentina and will appear here sooner or later).
- (cc) Rabies.
- (dd) Pseudo-rabies.
- (ee) Fowl diphtheria.
- (ff) Epithelioma contagiosa of fowls.

There were also papers read at the same congress on osteoporosis in horses and mules and contagious abortion in cows.

Some very common parasitic pests are not included in the above list namely: the Berne (warble) fly, the screw-worm fly, and the sand flea. Many others, such as mange parasites, lice, etc., could also be mentioned.

A few suspicious cases of forage poisoning have been seen by the writer and reported by others.

The writer has also observed numerous cases of purulent arthritis in young pigs and lambs. In most cases the condition

seemed to follow an infestation by one of the above mentioned parasites. We have seen it follow Berne, screw-worm and sand flea infestations, with seemingly no umbilical infection.

The Berne fly larva resembles our "warble" somewhat, but is many times worse, for it is not limited in numbers nor in its locations under the skin. It is perhaps most numerously encountered on the sides of the shoulders. Its common host is cattle, but various other animals at times are attacked, even man not being immune.

The screw-worm is also a serious menace, for the slightest wound or irritation to the skin is likely to become infested. But when free suppuration sets in the wounds usually heal quite readily. Dry manure is often put in the infested wounds to dry up the wound secretion and to hasten suppuration.

The sand flea—*bicho do pe* (parasite of the foot)—is still another veritable pest attacking principally hogs, dogs and man. The female burrows into the skin near the hoof or toe nail, then feeds and fills up with mature eggs.

The real scourge of the country, however, is foot-and-mouth disease. It is also one of the serious hindrances to the improvement of cattle, especially of the dairy breeds in the country, for one attack often permanently greatly reduces the milk flow. It also takes a large toll of the sucking pig crop. There is perhaps no section of the country permanently free from the disease but some sections suffer more frequently than others. It is so easily transferred and so difficult to control, that when it appears in a community few susceptible animals escape. It not infrequently attacks the same animals a second time after a lapse of only a few months, hence little immunity is developed by the disease itself. Usually little attempt is made to isolate against it, but on the contrary many owners, wanting to have it over with as soon as possible—two to four weeks—inoculate the mucous membrane of the mouths of the well animals with virus from the mouths of animals with mild cases. Treatment usually consists of local antiseptic astringents applied to the ulcerations of the mouth and feet. Chromic acid (2½%) is highly recommended by some for such.

Pneumo-enteritis of young animals, especially calves and pigs, is another heavy "toll taker" in this country. By some it is considered analogous to hog cholera, namely due to a filtrable virus and whose symptoms and lesions vary greatly because of secondary invaders and complications. By such reasoning it is

thought that each class of animal has its disease analogous to the above, even including distemper of dogs; and that a group name, such as septicemia multiforme, should be applied. Anti-serums are prepared against these conditions in pigs and calves much as our anti-hog cholera serum is produced, except, that besides the blood, all body and tissue juices are obtained from the virus animals and used for hyper-immunizing. Hogs (virus and hypers) are used for producing serum to be used in treating pigs, and cattle are used for producing serum for calves.

Many other features concerning the ailments in this country could be mentioned but the above will serve to give some conception of conditions existing here.

G. A. ROBERTS,  
*Resident Secretary for Brazil.*

*Lavras, Minas, Brazil, So. America, July 21, 1924.*

## ORGANIZATION OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

1924-1925

(Continued from January JOURNAL)

### FOREIGN CORRESPONDING SECRETARIES

Argentina.....	Carlos Lloveras, C. Pellegrini 830, Buenos Aires.
Brazil.....	G. A. Roberts, Agri. School, Lavras, Minas.
China.....	Chas. Chi Wang, National Southeastern Univ., Nanking.
Cuba.....	B. Crespo, Apartado No. 2518, Havana.
Egypt.....	J. E. Aghion, 6 Midan Soliman Pacha, Cairo.
England.....	R. W. Tuck, c/o American Consulate, 18 Cavendish Sq., London, W 1.
Jamaica.....	Stephen Lockett, Dept. of Agri., Kingston.
Mexico.....	L. Santa Maria, Apt. Post. No. 2067, Mexico, D. F.
Peru.....	J. F. Mitchell, c/o Cerro de Pasco Copper Corp., Oroya.
Porto Rico.....	Jaime Baguley, Dept. of Agri. & Labor, San Juan.
St. Kitts.....	Ernest F. Jardine, Box 18, Basseterre.
Scotland.....	A. W. Whitehouse, Glasgow Vet. College, 83 Buccleuch St., Glasgow.

### WOMEN'S AUXILIARY TO THE A. V. M. A.

Mrs. C. E. Cotton, President, Minneapolis, Minn.
Mrs. C. H. Stange, 1st Vice-Pres., Ames, Iowa.
Mrs. L. W. Goss, 2nd Vice-Pres., Columbus, Ohio.
Mrs. R. P. Marsteller, Secretary, College Station, Tex.
Mrs. H. P. Hoskins, Treasurer, Redford, Mich.

### DR. BRENTON IMPROVING

The many friends of Dr. S. Brenton, of Detroit, will be glad to know that he is making satisfactory progress toward recovery from the serious operation which he underwent in December. Although still in the hospital (Jan. 20) he is hoping to be in shape to return to his home by the first of February.

## ASSOCIATION MEETINGS

### PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION

The forty-second annual meeting of the Pennsylvania State Veterinary Medical Association was held at the Fort Pitt Hotel, Pittsburgh, Pa., September 16-17, 1924. There was quite a large attendance, with quite a number of veterinarians present from the surrounding states, particularly Ohio.

The program consisted of a number of very interesting papers and addresses. Dr. L. A. Merillat, president of the American Veterinary Medical Association, spoke on the work of the Association and the problems confronting the veterinary profession at the present time. Deputy Secretary of Agriculture McKee addressed the members on matters concerning the live stock industry. Mr. Murphy, assistant to Wayne Dinsmore, secretary of the Horse Association of America, addressed the meeting on the activities of the Horse Association.

Mr. E. S. Bayard, editor of the National Stockman and Farmer, Pittsburgh, Pa., a warm friend of the veterinarian and one who is always ready to do his bit, addressed the meeting in his usual refreshing style.

The following papers were read, all of which were very interesting and freely discussed:

"Opportunities Awaiting the Practicing Veterinarian in the Field of Poultry Husbandry," Mr. Paul R. Guldin, Yellow House, Pa.

"Some Transmissible Diseases of Poultry," Dr. E. L. Stubbs, Pennsylvania B. A. I.

"Instinct in our Domesticated Animals and Their Diseases," Dr. Edward Lodholz, Professor of Physiology, University of Pennsylvania.

"Castration of Animals," Dr. J. J. Kline, Danville, Pa.

"Navicular Disease," Dr. C. P. Bishop, Sunbury, Pa.

"Practicing Veterinary Medicine near State Line," Dr. F. A. Zimmer, State Veterinarian, Columbus, Ohio.

"Sterility," Dr. C. H. Case, Akron, Ohio.

"Some of the Common Diseases of the Digestive Tract of Small Animals," Dr. W. J. Lentz, University of Pennsylvania.

"A New Method of Determining the Age of Domestic Animals," Dr. J. P. Schmidt, U. S. B. A. I., Pittsburgh, Pa.

"Quittor Treatment," Dr. F. N. Sherrick, Connellsville, Pa.

"Cow-pox, True and So-called," Dr. L. A. Klein, University of Pennsylvania.

The election of officers for the coming year resulted as follows: President, Dr. F. N. Sherrick, Connellsville; vice-presidents, Drs. E. C. Porter, Newcastle; E. W. Powell, Bryn Mawr, and W. J.

Lentz, Philadelphia; treasurer, Dr. D. R. Kohler, Boyertown; corresponding secretary, Dr. H. R. Church, Harrisburg; recording secretary, Dr. C. S. Rockwell, Philadelphia.

C. S. ROCKWELL, *Recording Secretary.*

#### VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY

The regular monthly meeting of the Veterinary Medical Association of New York City was called to order by the president, Dr. J. Elliott Crawford, in the Academy of Medicine, 17 W. 43rd St., New York City, Nov. 5, 1924, at 8:30 p. m.

The minutes of the October meeting were read and approved.

Dr. Otto Faust, of Poughkeepsie, N. Y., read a paper, "The Troubles of a Country Veterinarian." This paper was unusually interesting, dealing with ten different difficult cases he had recently met with. The cases of lead poisoning and milk fever were especially instructive and were discussed by Drs. Chase, Knapp, and others. Dr. Knapp, of Milbrook, cited a number of cases of milk fever and urged the use of about one pint of milk from a diseased quarter, to be given the cow to drink, once daily. He had used this procedure with good results.

Dr. Howard J. Milks, of the N. Y. State Veterinary College, Cornell University, addressed the meeting on "The Use and Abuse of Drugs." During the course of his remarks he referred to a large number of drugs put on the market each year, supposedly of merit, but most of them gradually disappearing after a time. Usually the veterinarian again falls back on the old standard products that have proved their worth for many years. This review, by Dr. Milks, of the uses of drugs used and misused, was most instructive and we hope to be able to hear from him soon again.

Dr. Theo. F. Krey gave a short talk on the use and preparation of drugs. A vote of thanks was extended Drs. Faust and Milks for their contributions to the program.

The secretary was ordered to send a letter of thanks to the Lederle Laboratories for their splendid entertainment and hospitality afforded the members of this Association at the recent meeting held at Pearl River.

An abstract of the amended veterinary laws was ordered printed on the notices of the December meeting.

No further business appearing the meeting adjourned.

C. G. ROHRER, *Secretary.*

### VETERINARY MEDICAL ASSOCIATION OF NORTH-WESTERN ILLINOIS AND SOUTHERN WISCONSIN

The sixth annual meeting of the Veterinary Medical Association of Northwestern Illinois and Southern Wisconsin convened at Lena, Ill., October 16, 1924. Dr. J. G. Blum, president of the Illinois State Association, addressed the meeting, as did Dr. T. H. Ferguson, of Lake Geneva, Wis.

Officers for the ensuing year were elected as follows: President, Dr. F. D. Yeager, Lena, Ill.; vice-president, Dr. C. H. Rosenstiel, Freeport, Ill.; secretary-treasurer, Dr. L. T. Oberheim, Elizabeth, Ill.; assistant secretary, Dr. J. B. Baber, Stockton, Ill.

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### ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION

The forty-second annual meeting of the Illinois State Veterinary Medical Association convened at the Lexington Hotel, Chicago, Dec. 2, 1924, with Dr. J. G. Blum presiding. The meeting opened with a business session consisting mainly of reports of officers and committees.

The program assigned the subject, "The American Veterinary Medical Association," jointly to President Merillat and Secretary-Editor Hoskins, but Dr. Merillat very graciously allowed Dr. Hoskins to take the entire period allotted for this subject. Commenting on several of the important features of President Blum's address, Dr. Hoskins applied these to the profession in a national way and stressed the point that, although veterinarians are now engaged in a constantly increasing number of lines of work, they are still members of one and the same profession. The policy adopted by the A. V. M. A. at Des Moines was touched upon and the members were urged to make use of it to the fullest extent.

"The work of the Division of Animal Pathology of the University of Illinois" was presented by Dr. I. B. Boughton, who explained the function of the laboratories under his direction and told how his institution was endeavoring to be of real service, through the veterinary practitioners, to the animal industry of the state.

"The Duties of the County Veterinarian" was the subject assigned to Dr. J. H. Lintner, B. A. I. Inspector-in-Charge of tuberculosis eradication in Illinois. Dr. Lintner told of the progress of tuberculosis eradication work in the state and outlined

the duties and limitations of veterinarians assigned to this work.

"Humane Work by the Veterinarian" was presented by Dr. A. H. Baker, of Chicago, who asked veterinarians to take a greater interest in humane work and at the same time urged the members of the profession to employ the most humane methods in all of their work.

Dr. W. J. Embree, of the Western Weighing and Inspection Bureau, showed a number of new films at the beginning of each of the sessions during the meeting.

At the afternoon session, in the absence of Dr. John R. Mohler, the subject of "Foot-and-Mouth Disease" was presented by



DR. E. L. QUITMAN  
President of the Illinois State Veterinary Medical Association

Dr. L. Enos Day, of Chicago, who had just returned from California where he spent nine months in foot-and-mouth disease eradication. His description of the disease, as found in California, as well as the methods of combating it, proved to be intensely interesting. At the conclusion of the address by Dr. Day the following program was presented:

"The Treatment of Actinomycosis," Dr. D. S. Martin, Kankakee.

"Comparative Tests of Antiseptics in Practice," Dr. L. N. Morin, McLean, Ill.

"Illustrations of Anaphylaxis in Practice," Dr. E. L. Quitman, Chicago.

"The Feeding of Swine Before and After Vaccination," Dr. R. E. Kluck, Forreston.

A very spirited discussion developed on the subject of anaphylaxis, in which a number of very interesting points were brought out by various members. The subject of antiseptics also elicited quite a lively discussion. Dr. Kluck's paper will be published in the JOURNAL.

The Wednesday morning session was a symposium on practice, with the following participating:

- Dr. E. R. Steel, Grundy Center, Iowa—"Hints on Swine Practice."
- Dr. Harry Caldwell, Wheaton—"Hints on Dairy Practice."
- Dr. John Jaffray, Chicago—"Hints on Horse Practice."
- Dr. A. C. Worms, Chicago—"Hints on Small Animal Practice."
- Dr. J. R. Christian, Woodhull—"Hints on Poultry Practice."

The program was concluded with "The Swine Breeding Situation in the Corn Belt," by Dr. A. T. Kinsley, of Kansas City, Mo.

At the Wednesday afternoon session the following program was presented:

- "The Successful Practitioner of the Future," Dr. W. J. Martin, Kan-kakee.
- "The Veterinary Service of the Chicago Health Department," Dr. A. E. Becker, Assistant to the Commissioner of Health, Chicago.
- "Infant Mortality Among Swine," Dr. C. C. Hastings, Williamsville.
- "The Transmission of Human Disease to Animals," Dr. T. G. Hull, Chief of State Laboratories, Springfield.
- "Stock Judging at Fairs," Dr. T. A. Sigler, Greencastle, Ind.
- "The Practitioner in Area Testing for Bovine Tuberculosis: The Iowa Plan," Dr. E. R. Steel, Grundy Center, Iowa.

Following the presentation of these papers the business session was held and an election of officers, which resulted as follows: President, Dr. E. L. Quitman, Chicago; vice-president, Dr. R. E. Kluek, Forreston; secretary-treasurer (continued), Dr. L. A. Merillat, Chicago; assistant secretary, Dr. W. B. Holmes, Springfield; member of Board of Censors, Dr. C. C. Hastings, Williamsville.

#### **NEBRASKA STATE VETERINARY MEDICAL**

The twenty-seventh annual meeting of the Nebraska State Veterinary Medical Association was held in the Lincoln Hotel, Lincoln, Nebraska, December 9-10, 1924.

The morning session of the first day was called to order at 9 a. m., by Dr. W. J. Moslander, president, who introduced Hon. F. C. Zehrung, Mayor of Lincoln, who gave the address of welcome. Dr. D. W. Hurst, of Tecumseh, responded. Following roll call and reading of the minutes, Dr. Moslander delivered the president's address which contained many important points for consideration of the members.

Professor H. J. Gramlich, in charge of the Animal Husbandry Department of the University College of Agriculture at Lincoln,

delivered a lecture on "The Future Live Stock Outlook," outlining information which the practitioner should know in keeping his clients properly informed. Dr. H. Jensen, of Kansas City, used the remaining minutes before noon in conducting a round-table on general practice which was entered into by those present.

It has been the practice in former years to hold a clinical session during the afternoon of the first day, but owing to lack of proper material this part of the program was dispensed with and the afternoon more profitably used in general session.

At 1:30 p. m., the meeting was again called to order in the Garden Room, where the Government's new motion picture film on "Foot-and-Mouth Disease Control" was shown as the first order of business. The public was invited to witness the showing of this film and a good-sized crowd was present. Dr. A. Eichhorn next gave an interesting talk on "The Recent Developments in the Control of Infectious Diseases," followed by a short address from Dr. L. R. Cantwell, Chief of the Nebraska Bureau of Animal Industry. Dr. R. R. Dykstra, of Manhattan, Kans., read a paper on "The Handling of Udder Diseases." This important paper was the source of much interest. Case reports by Dr. B. Witt, of Scribner, and Dr. M. A. Latham, of Superior, ended the afternoon session.

The annual banquet was a brilliant affair, served at 6:30 p. m. to the members, their wives and friends. Favors in the form of toy balloons, whistles and paper hats caused much merriment. During the banquet a number of musical selections were rendered by a saxophone trio, with individual vocal numbers. Following the dinner, Mr. E. R. Danielson, Secretary of the State Board of Agriculture, was introduced by Dr. H. Jensen, toastmaster, and delivered the address of welcome on behalf of the Lincoln Chamber of Commerce, which was responded to by Dr. G. A. Young, of Syracuse. Dean E. A. Burnett, of the University College of Agriculture, then gave the principal address of the evening, following which dancing was enjoyed until midnight. The room was elaborately decorated in true Christmas style.

The morning session of the second day was started with the report of the Secretary-Treasurer, followed by a paper on "Stock Yards Infections," prepared by Dr. W. G. Melchiorsen, of Omaha. An interesting paper on "Equine Sclerostomiasis" was next presented by Dr. J. E. Weinman, of Lincoln. Reports of the Legislative Committee, by Dr. W. T. Spencer, and of the Executive and Publicity committees, by Dr. C. J. Norden, were

followed by the election of new members and officers for the coming year. The election of officers resulted in Dr. C. J. Norden, of Lincoln, being chosen as president; Dr. L. Collins, of Stanton, vice-president; and Dr. F. R. Woodring, of Lincoln, reelected secretary-treasurer. The hour of noon having arrived, the meeting recessed until 1:30 p. m.

The first subject of the afternoon session was a paper by Dr. L. B. Ernst, of Washington, D. C., on "The National Tuberculosis Situation." He explained the work as it is being carried on in a cooperative manner by the various states and the federal government. "Vesicular Stomatitis" was the subject of an address by Dr. A. T. Kinsley, which was followed by a great deal of discussion by the members, as this disease is causing much concern to those interested through its prevalence in the state. With the aid of charts and prepared specimens Dr. L. Van Es, of Lincoln, gave a very interesting and instructive talk on tuberculosis. Dr. P. L. Cady, of Arlington, read a paper on "The Needs of the Profession," which was discussed quite freely. Dr. Frank Breed, of Kansas City, presented the subject of "Rabies" in a very interesting manner, bringing out many important points. The last speaker on the program was Dr. E. C. Ackerman, of Wilber, who had something valuable along the poultry line as usual.

After selecting Omaha for the 1925 meeting the 1924 meeting adjourned *sine die*.

The ladies' program consisted of shopping tours, luncheons, and trips of interest in the city.

F. R. WOODRING, *Secretary*.

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#### NORTHEASTERN INDIANA VETERINARY MEDICAL ASSOCIATION

The Northeastern Indiana Veterinary Medical Association met at the Court House, Fort Wayne, Ind., December 18, 1924.

The embargo on poultry placed by New York City was thoroughly discussed and the veterinarians present pledged their support to other organizations to place Indiana on the clean list as soon as possible. Dr. H. D. Demsey, of Huntington, read a paper, "New Ethics in the Practice of the Veterinarian." The meeting concluded with a banquet at the Y. M. C. A. and a theater party, attended by the members and their wives.

Officers for the year were elected as follows: President, Dr. C. O. Petry, Ossian; vice-president, Dr. C. C. Winegardner, Goshen; secretary-treasurer, V. C. Fretz, Bluffton.

### WESTERN NEW YORK VETERINARY MEDICAL ASSOCIATION

The eleventh annual meeting of the Western New York Veterinary Medical Association was held in Buffalo, N. Y., Dec. 11, 1924. The weather being ideal, a good representation of the membership was present.

The meeting opened with clinics at the hospital of the Erie County Society for the Prevention of Cruelty to Animals, followed by a business meeting and election of officers. Dr. F. F. Koenig, of Jamestown, N. Y., was elected president for the coming year, Dr. George R. Chase, of Batavia, N. Y., vice-president and Dr. F. F. Fehr, of Buffalo, N. Y., re-elected secretary-treasurer.

At 6:30 the members joined the ladies, who had been entertained during the afternoon at the home of Mrs. Chas. D. Blaser, at a banquet served in the Buffalo Consistory dining hall, plates being laid for fifty-six.

After dinner the ladies attended the concert given by the celebrated violinist, Jascha Heifetz and the members reconvened to the S. P. C. A. Hall to listen to an unusually instructive program.

The main speaker of the evening, Dr. J. A. Campbell, of Toronto, Ontario, delivered a most interesting address, with demonstrations, on "Dystokia in Small Animals," followed by a paper on "Dystokia in Large Animals," by Dr. E. C. Cleveland, of Cattaraugus, N. Y. A general discussion of these subjects, with numerous case reports, brought to a close one of the most enjoyable meetings yet held by the Association.

A rising vote of thanks was tendered Dr. Campbell, and all expressed the wish to have the pleasure of hearing him again.

The next meeting of the Association will be held the second week in July, at Gowanda, N. Y., the guest of Dr. J. G. Hills.

F. F. FEHR, *Secretary.*

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### WABASH VALLEY (IND.) VETERINARY ASSOCIATION

The Wabash Valley Veterinary Association met at Peru, Ind., December 12, 1924. Following a business session, which lasted until late in the afternoon, officers for the coming year were elected as follows: President, Dr. H. A. Sailors, Wabash; secretary, Dr. Baker, Wabash. Dr. T. O. Keller, Peru, was appointed chairman of the Legislative Committee. The Association now boasts a membership of 74. A turkey dinner, attended by the members and their wives, concluded the program.

### DELAWARE VETERINARY MEDICAL ASSOCIATION

Fifteen members of the Delaware Veterinary Medical Association gathered at the University of Delaware on Friday morning, December 19, 1924, for the annual meeting.

Dr. H. P. Eves, president, called the meeting to order. His address was of timely interest and unusually interesting. He took for his subject, "Veterinary Medicine, Past, Present and Future." Dr. Eves is especially well qualified to speak upon this subject as his professional activities have extended over a period of thirty-eight years. During this interval he has maintained one of the largest mixed practices in the East, and, in addition, served for a number of years as secretary of the Live Stock Sanitary Board.

Dr. Eves apparently shares the view of many of our leading veterinary authorities in that he sees no cause for alarm, or a pessimistic outlook, for veterinary medicine. He vividly described the type of men engaged in veterinary medicine at the time of his graduation from the University of Pennsylvania in 1887, and stated he has witnessed a constant improvement in the quality of the men engaging in the work as well as the quality of service rendered. He also stated that communities which have enjoyed high class veterinary service in the past will never tolerate conditions as they were early in his career. Owners of live stock have improved intellectually and are demanding a higher quality of service from their veterinarians. He advised veterinarians to encourage young men of promise to study veterinary medicine.

The president's remarks were heartily endorsed by Dr. F. P. Ruhl, a graduate of forty years experience, and yet a man who has not lost the enthusiasm and bloom of youth. Dr. Ruhl, in his fortieth year of practice, is doing more work and covering a larger territory than at any period during his long and successful career.

This discussion brought out two conditions in the evolution of veterinary medicine which are worth while considering. First, the automobile, rather than decreasing practice, has made it possible for a practitioner to increase his practice and his sphere of service. Second, the tendency on the part of live stock owners to engage veterinarians to supervise the health of their herds and flocks, rather than simply to administer to the animals which become ill or injured.

The experiences of Dr. M. L. Zurkow in the recent California outbreak of foot-and-mouth disease were extremely interesting. Dr. Zurkow, who is in the Federal service and stationed in Delaware on hog cholera work, was temporarily transferred to California. Space will not permit, in a brief report of this kind, an extensive review of the Doctor's observations, but suffice it to say, those who did not hear the talk missed a real treat.

Fistula of the withers and poll evil are surgical diseases frequently encountered in Delaware, and the present low financial value of the horse notwithstanding, Dr. Louis Levinson has devised a method of operating upon and treating these cases which in the greater majority are proving satisfactory to both veterinarian and client. Dr. Levinson illustrated his talk with black-board demonstrations, all of which served to present the technic in a very clear and comprehensive manner. It is plain to the observer that Dr. Adams' unusual ability as a surgeon and teacher has made a profound impression upon those who were fortunate enough to sit under him, and that the seed of his teaching had been planted upon fertile soil.

The subject of ascaris infestations in swine was presented in a carefully prepared paper by Dr. A. S. Houchin. The life cycle of the parasite, together with the modern methods of prophylaxis, consisting of the preparation of the farrowing pen and sow and the proper management of pig lots, were well presented. The practical value of the method has been demonstrated in several counties in the Middle West, and veterinarians in country practice may render valuable assistance to the swine industry by advising owners in the matter of preventing ascaris infestations.

Dr. W. G. Middleton, who is in charge of tuberculosis eradication in Delaware and New Jersey, reported upon the progress of this work as it pertains to this state. The Federal forces in cooperation with the state agencies are making substantial progress in the eradication of this disease. The opposition to the work on the part of some farmers, and a few veterinarians, which was evident some time past, is now an almost completely negligible factor, and at no time has the spirit of cooperation existed that is evident today.

The present status of the dairy industry was dealt with by Prof. T. A. Baker, of the University. Following a statistical discussion of the subject, Prof. Baker discussed four factors which he believes are of prime economic importance in the fostering of this industry. They are: (1) development of better market

facilities; (2) the breeding of better producing cows; (3) better systems of feeding for milk production; and (4) the control of diseases. Professor Baker made no attempt to discuss the fourth factor, stating this was purely a veterinary subject insofar as the technical handling of the problem was concerned. He further stated that the practicing veterinarian, from an extension point of view, is provided with an excellent opportunity for bringing about improvement in the dairy industry of the state.

The secretary endeavored to summarize the abortion situation, and reported upon experiments under way in the Department of Animal Industry of the University. Some of the members did not concur in regard to his conclusions on bacterins and vaccines when he stated these products were of speculative value. Those holding an opposite view quoted a number of leading writers who hold opinions to the contrary, but altogether the discussion stimulated a renewed interest in the subject.

By a unanimous vote of the members the old officers were re-elected for the ensuing year. They are: Dr. H. P. Eves, president; Dr. C. C. Palmer, secretary; Drs. F. P. Ruhl, A. S. Houchin, and H. B. McDowell, Executive Committee.

C. C. PALMER, *Secretary.*

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#### EASTERN IOWA VETERINARY ASSOCIATION

A Committee on Publicity has been appointed by Dr. J. C. McCabe, West Liberty, Iowa, president of the Eastern Iowa Veterinary Association. The committee consists of Drs. Henry Hell, Wilton Junction, chairman; J. S. Potter, Iowa City and Grant B. Munger, Cedar Rapids. This committee has been charged with the duty of stimulating public interest in the capability of the veterinary practitioner for competent and authoritative service and advice in the care and handling of live stock, as well as the control and eradication of contagious and infectious diseases of animals and the importance of such service to public health.

Plans are being made by the officers of the Association for a midsummer meeting. This will be in the form of a picnic, to which veterinarians and their families will be invited. No literary program will be offered, but some good horse racing is promised in the way of amusement. The indications are that this meeting will be one of the best attended in the history of this live-wire organization.

## VIRGINIA STATE VETERINARY MEDICAL ASSOCIATION

The Virginia State Veterinary Medical Association held its thirty-second annual meeting at Richmond, Virginia, on January 8-9, 1925. The meeting was called to order by the president, Dr. E. A. Robinson, of Petersburg, Va.

The Association was then welcomed to Richmond by the Mayor, Dr. J. Fulmer Bright, who complimented very highly the veterinary profession on its attainments. Dr. J. G. Ferneyhough, State Veterinarian, responded to the address of welcome, and assured the Mayor that the veterinarians fully appreciated his welcoming remarks, and further assured him that the members of the Association would support him in the progressive health movements which his administration has instituted.

Dr. G. C. Faville, of Hampton, Va., one of the three living charter members of the Association, gave an excellent historical sketch of the Association, under the title, "Our Association—A Retrospect and Prophecy." Though the oldest member of the Association, Dr. Faville is still one of its most enthusiastic and active supporters and workers. A motion was unanimously passed by the Association that this paper be sent to the *JOURNAL* for publication.

Dr. W. S. Trigg, of Manassas, Va., presented a paper, "The Veterinarian in Relation to Public Health."

Dr. John W. Adams, of Philadelphia, gave an informal talk, "Advice to the Young Surgeon." This talk was exceedingly interesting and instructive. Dr. Adams, in a very delightful manner, outlined methods of anesthesia and the necessity for having the patient in an unconscious condition while performing an operation.

Dr. W. S. Gochenour, of the Pathological Division, Bureau of Animal Industry, discussed "Hemorrhagic Septicemia Aggression," with special reference to the experimental investigations, nature of the product, its effect and usefulness.

Dr. W. B. Foster, Chief Health Officer of Richmond, made an address in which he very clearly outlined the relation between the medical and veterinary professions, paying especial attention to the experimental, research, and public health angles.

"Municipal Meat Inspection" was ably discussed by Dr. H. H. Rowe, Chief, Richmond Meat Inspection Division. He enumerated the great benefits to be derived therefrom in the protection

of human health, and also as a means of locating centers of infections among live stock.

Capt. Shoemaker, U. S. Army, gave an outline of the organization of the army, with particular reference to the Officers Reserve Corps, and more especially the Veterinary Officers Reserve Corps.

Election of officers for the ensuing year was the next order of business, and resulted as follows: President, Dr. H. H. Rowe, Richmond; 1st vice-president, Dr. J. S. Nicholas, Charlottesville; 2nd vice-president, Dr. J. T. Wilson, Hampton; secretary-treasurer, Dr. W. H. Ellett, Midlothian.

The next meeting will be held at Charlottesville, Virginia, July 9-10, 1925.

W. H. ELLETT, *Secretary.*

#### KEEPING ANIMAL DISEASES OUT OF HAWAII

The Territory of Hawaii recently opened a new animal quarantine station at Honolulu. Dr. P. H. Browning, territorial veterinarian, is in charge. The new station covers a tract of about five acres. It has accommodations for horses, mules, cattle, sheep, hogs and dogs. On the day of the official "housewarming"



Hawaiian Quarantine Station

there were 160 mules, 7 cattle, 10 dogs and 3 horses under observation, these animals being kept in quarantine and not allowed admission to the Islands until the veterinary authorities are sure that they do not harbor any infectious or contagious disease. Dogs are inoculated against rabies before they are released.

## MISCELLANEOUS

### SOME LABORATORY STATISTICS ON RABIES

In compiling the annual report of diagnostic specimens examined at this laboratory during the year ending September 1, 1924, some very interesting results concerning the presence of rabies in Illinois were encountered. During this period, the brains of forty-one animals suspected of being rabid were examined, twenty of which proved positive and twenty-one negative.

The positive specimens, and some of the negative specimens, were submitted from twelve counties, eleven of which are in the southern and one in the central part of Illinois. \* \* \* It should be borne in mind, however, that many positive cases were examined at other laboratories in the state, which indicates that the results given above do not necessarily mean that the occurrence of rabies is confined to the southern and central parts of Illinois. The fact that such an unusually large number of positive cases were found, however, would seem to indicate that rabies is endemic in certain localities. In all probability, some cases of rabies occurred which were not reported.

Of the twenty positive brains examined, fourteen were from dogs, two from horses, two from cats, one from a rabbit, and one from a coyote. The presence of rabies in the two cats was interesting, inasmuch as cats are seldom attacked by the disease. The positive findings in the coyote indicates not only the part which wild animals may play in the dissemination of the disease, but also the difficulties which are often encountered in its control.

As a routine procedure, intramuscular or intracranial inoculation of a rabbit with material from the suspected brain was made. The time required for the rabbit thus inoculated to succumb to the disease varied from five to fifty-three days, depending upon the method of inoculation, the virulence of the infective material, and the resistance of the animal. Twenty-one days was the average time required for the virus to kill the rabbit in the cases cited above.

Clinical symptoms of rabies were invariably seen two to three days before death occurred. These usually consisted of an

ascending paralysis and extreme weakness, followed by coma and death.

Microscopic examinations of the rabbit brains were always made, to exclude the possibility of death from any other cause. In several cases which proved upon rabbit inoculation to be positive, microscopic examination of the original specimen could not be made because of advanced bacterial decomposition. In such cases no diagnosis could be made until the inoculated rabbit showed clinical symptoms of rabies.—*Animal Pathology Exchange*, University of Illinois, December, 1924.

#### DETROIT PROTECTS ITSELF AGAINST MAD DOGS

Every dog in Detroit must be vaccinated against rabies, or else he is allowed on the streets only when on a leash or muzzled according to an ordinance that went into effect in that city in June.

The ordinance was passed following a rapid increase in the

**Muzzle or Vaccinate Your Dog**



Cartoon from The Detroit Times

number of mad dogs and cases of rabies in the city in the early months of the year.

Unmuzzled dogs found on the street without tags certifying that they have been vaccinated are taken to the city pound.

The ordinance seems to be accomplishing its purpose. Of thirteen dogs taken to the pound in January last, seven were found rabid; in February twenty out of thirty were rabid; in March twenty-five out of forty-seven; in June twenty-two out of thirty-six. In July, after the ordinance was passed, only thirty dogs were taken up as not complying with the law and only ten were found rabid. In August only twelve out of thirty-two were found rabid.

Rabies is not a common disease, but the agonizing suffering of its victims is so dreadful and the fatal result so inevitable that no effort should be spared by any community to destroy every possible source of infection.

Vaccination of animals against this disease is easy, certain, and not very costly. Every dog that is worth keeping at all is worth protecting against rabies for its own sake as well as for the protection of other animals and of the human beings with whom it may come in contact.

Inoculation or vaccination against rabies can be done by any veterinary surgeon. Dogs not worth such protection should be painlessly put to death.—*Hygeia*.

#### TEXAS FOOT-AND-MOUTH DISEASE OUTBREAK

By prompt and efficient application of heroic measures, the outbreak of foot-and-mouth disease discovered in Harris County in September, appears to have been stamped out in less than one month.

The infection was first found in a herd of cattle located about twenty miles south of Houston, by a veterinarian who had been called to examine an animal found to be suffering from an unknown disease. The prompt action in calling the veterinarian by the owner of this herd, Dr. Wm. States Jacobs, a Presbyterian minister of Houston, Texas, resulted in the authorities being able to get the situation well in hand before the infection could spread over a large area. As soon as the diagnosis showed that it was foot-and-mouth disease, the State and Federal authorities established rigid quarantines and began the applica-

tion of all known methods to eradicate the disease and prevent further infection.

While the disease was never found over a large area, several herds in addition to the Jacobs cattle and located in the same vicinity were found to be affected. All of the cattle found with the disease were promptly slaughtered, buried and covered with lime and dirt. In addition to the infected cattle, those which had been in contact with them were also disposed of in the same manner. This is the only way yet discovered to stamp out the disease. Live stock disposed of in a foot-and-mouth eradication campaign are valued by appraisers appointed for that purpose, and the owners are paid by the State and Federal Governments.

No doubt few people realize the vastness of the undertaking in stamping out an outbreak of foot-and-mouth disease. Quick and efficient action is necessary. The preparation of a trench to bury several hundred cattle is no small task. The procuring of machinery and labor to do this work, the proper handling of the live stock and carrying on of these operations so as to not spread infection, requires a large and well organized force of experts with great executive ability at its head. The live stock sanitary authorities of Texas and the Governor of the State displayed splendid judgment in asking the Federal Government, the highest and most powerful authority in our land with the most experience to supervise the work.—(Editorial in *The Cattlemen.*)

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### ANOTHER BIG IDEA

Dr. N. S. Mayo, of the Abbott Laboratories, forwards a copy of another literary gem, which is not without its veterinary interest:

Sir:

Permit me to inquire if you should, could make me a powder with the smell of wolf or rabbits. It should be for purpose of use by training wolfhound. With hunting by wolfhound, we close them in into a box on the automobile. Now when we see some wolf, we led the dogs and, but best should be to not speak to the dogs, if we had some powder with same smell as the wolf has, we could press some in the air in that direction and would make the dogs eager to run off.

Would be very thankful for this or if not you can make same not included in your sphere, could give me any advice where to get same.

I beg you kindly keep this confidently and thanking in advance for a early reply that I hope will be favorable.

I am Sir

Your respectfully

If any of our members has anything to suggest, Dr. Mayo will be glad to hear from him.

### DR. EAGLE PROMOTED

Dr. R. F. Eagle (K. C. V. C. '01), for some years connected with the Executive Department of Wilson and Company, has been made assistant to the president of this company.

Dr. Eagle entered the employ of Wilson and Company, in 1913, as division beef superintendent. The following year he was made general division superintendent of beef and by-products. In 1915 he was promoted to the superintendency of Wilson and Company's Oklahoma City plant. Two years later, in 1917, he returned to Chicago and was made assistant general superintendent of all the Wilson plants.

In 1919 Dr. Eagle was transferred to the Executive Depart-



DR. R. F. EAGLE

ment and made assistant to the vice-president, and also attached to the staff of the president, in carrying on certain special activities for him personally. He served in this capacity until his recent promotion to the position of assistant to the president.

Dr. Eagle's latest promotion comes as happy news to his numerous friends in the packing industry and the veterinary profession. His connection with and activities in the Institute of American Meat Packers and also his association with live stock producers' organizations have always marked him as an outstanding figure in the industry.

## NECROLOGY

### WILLIAM TEMPLE MONSARRAT

Dr. W. T. Monsarrat died suddenly Dec. 9, 1924, at Honolulu, Hawaiian Territory. Heart trouble was the cause of death. He was sixty-three years of age.

A Hawaiian by birth Dr. Monsarrat received his veterinary training at the Ontario Veterinary College, having been graduated with the class of 1889. He returned to Honolulu shortly after his graduation and entered practice. From July, 1909, up until the time of his death, Dr. Monsarrat held the position of



DR. W. T. MONSARRAT

city and county veterinarian of Honolulu. He was secretary to the Territorial Board of Examiners in Veterinary Medicine.

Dr. Monsarrat joined the A. V. M. A. in 1899 and attended several of the annual meetings between that date and 1910. From 1899 to 1908 he served in the capacity of Resident Territorial Secretary for Hawaii, probably the longest tenure of such an office in the history of the Association. In 1906 he was elected a vice-president of the A. V. M. A. At the first annual meeting

of the Hawaiian Veterinary Medical Association, held Oct. 20, 1924, Dr. Monsarrat was elected president.

In the article by Dr. A. R. Rowat, "Early Conditions of the Veterinary Profession in the Hawaiian Islands," published in the JOURNAL last month, numerous references were made by the author to Dr. Monsarrat, known by his most intimate friends as "Honolulu Bill." His colleagues always regarded him as a true friend, a gentleman and a high-class veterinarian. He was a great lover of animals and was regarded as a high authority on dogs. He was fond of athletics and took a deep interest in horse racing, polo, foot-ball, base-ball and rowing. He was a charter member of the Myrtle Boat Club of Honolulu. Dr. Monsarrat is survived by his widow, a son and three brothers.

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#### FRED C. STEHL

Dr. Fred C. Stehl, of Tonica, Ill., died December 13, 1924, following a stroke of apoplexy from which he suffered eight days previously. He was thirty-six years of age, having been born October 1, 1888. He was a graduate of the McKillip Veterinary College, class of 1914. He is survived by his widow, one daughter, his father and brother, four brothers and three sisters.

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#### HOMER JOHNSON

Lt. Homer Johnson, Veterinary Corps, U. S. Army, died at Fort Bliss, El Paso, Texas, December 14, 1924, following an attack of pneumonia. He was in his 37th year.

After his graduation from the Chicago Veterinary College, in 1912, Dr. Johnson practiced at Columbia, Iowa, with Dr. Spiker, and later at Bussey, Iowa, for several years. He then entered the Army service, and was stationed on the Mexican border. During the recent war, he was stationed at different camps, but was not sent overseas. After the war, he spent about three years in the Canal Zone.

Lt. Johnson joined the A. V. M. A. in 1916. He is survived by his widow.

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#### WILLARD E. WIGHT

Dr. W. E. Wight, of Pittsburgh, Pa., died suddenly in Smyrna, Fla., December 22, 1924. He was a graduate of the Ontario Veterinary College, class of 1883, and had been in active practice in Pittsburgh for about 25 years.

Dr. Wight joined the A. V. M. A. in 1896 and attended many

of the annual conventions. He was at Des Moines last year. He was a member of the Pennsylvania State Veterinary Medical Association, and served three terms as vice-president. He was a member of the Odd Fellows, the Schenley Matinee Club, and a director of the Oakland Board of Trade. He is survived by his widow, one son, two daughters, one brother, and three sisters. His son, Captain Allen C. Wight, of the Veterinary Corps, U. S. Army, is stationed at Fort Logan, Colorado. Burial took place at his old home, Delaware, O.

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### ALEXANDER WADDELL HARRIS

Lieutenant Colonel A. W. Harris died Dec. 19, 1924, at Ottawa, Ont., Can.

The deceased was born in Ottawa, March 5, 1861, the son of the late Dr. James Harris and the late Jane (Hunter) Harris. He received his early education in the public schools and the Collegiate Institute of Ottawa. He was graduated from the Montreal Veterinary College, with honors, in 1880, and engaged in the practice of his profession in Ottawa. In 1890 he obtained the degree of Doctor of Veterinary Science from the faculty of Comparative Medicine and Veterinary Science of McGill University, and in 1884 was elected a member of the Board of Examiners.

Lieut. Col. Harris took a keen interest in military affairs early in life, having joined the Princess Louise Dragoon Guards as a trooper in 1879. Successive promotions finally brought him the appointment of Lieutenant Colonel in the Canadian Army Veterinary Corps. During the South African war he was entrusted with the task of securing and inspecting all the remounts for the Canadian contingents. In the Great War Lieut. Col. Harris rendered even more conspicuous service and acted as purchaser of remounts for the Canadian, British and French governments. For the latter country he bought, inspected and supervised the shipment of 100,000 horses. His services in this respect received the highest commendation from the various governments.

He joined the A. V. M. A. at the Ottawa meeting in 1903.

The deceased was in his sixty-fourth year, and death followed an illness of a year's duration, his condition having become critical within the past few months. He is survived by his widow, one daughter, one son and one brother, Dr. J. G. Harris, of Duluth, Minn.

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R. A. McL.

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**ARTHUR JAMES SHANKS**

Dr. A. J. Shanks, of Shelby, Ohio, died December 23, 1924, after an illness of several weeks.

Born at Willard, Ohio, in 1873, Dr. Shanks received his veterinary training at the Chicago Veterinary College. He was graduated with the class of 1912. He immediately located in Shelby and established a very lucrative practice, which extended over Richland and adjoining counties in all directions.

Dr. Shanks joined the A. V. M. A. in 1920. He was a member of the Ohio State Veterinary Medical Association, Northwestern Ohio Veterinary Medical Association, Golden Rule Lodge No. 562 F. & A. M., of Willard; a director of the Richland County Chapter of the Izaak Walton League, a member of the Fish and Game Association and of the Alpha Psi Fraternity.

Five sisters survive the deceased.

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**W. R. RAMSEY**

Dr. W. R. Ramsey, of Middletown, Ind., died at his home, January 3, 1925, after an illness of several months. He was 53 years of age. Dr. Ramsey was a graduate of the Indiana Veterinary College, class of 1896, and is survived by his widow, one daughter and two sons.

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**JOHN MARSHALL**

Dr. John Marshall, emeritus professor of chemistry and toxicology in the University of Pennsylvania, died in Philadelphia, January 5, 1925. He was 69 years old and had retired, in 1922, after having been connected with the University ever since his graduation in 1878. The death of Dr. Marshall will be mourned by all of the older graduates of the Veterinary School of the University. For many years Dr. Marshall lectured to the veterinary students on general chemistry. In 1889, upon the resignation of Dr. Rush Shippen Huidekoper, Dr. Marshall became Dean of the Veterinary School, and held this position until he was succeeded by Dr. Leonard Pearson, in 1895. During a part of this time he was also Dean of the Medical School (1892-1900). He was a member of the Board of Managers of the Veterinary Hospital since 1890, and during this entire period always took a fatherly interest in the Veterinary School and its

welfare. Dr. Marshall thoroughly appreciated the importance of veterinary education and played an important part in the development of the University of Pennsylvania Veterinary School, from its opening, in 1884, until his retirement two years ago.

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### S. LINDSLEY PAUL

Dr. S. L. Paul, of Milford, Ill., died at his home, January 13, 1925.

Born in Weedsport, N. Y., Oct. 22, 1866, the deceased moved to Chicago in 1892, where he lived until 1906, when he located in Milford. He was graduated from the McKillip Veterinary College in 1908, and practiced his profession thereafter, at Milford, continuously until his death.

In 1915 Dr. Paul was elected a village trustee and served until 1919, when he was elected village president, which office he held at the time of his death. His fifteen years of public service earned for Dr. Paul the very high esteem, confidence and friendship of all of the people of Milford. He was extremely conscientious in all his dealings, considerate of others, generous, and loyal, and when failing health prompted him to relinquish public office, several years ago, local sentiment was so strong that he was persuaded to remain in office.

Dr. Paul is survived by his widow, one son, one sister and one brother.

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### J. HUGO REED

Dr. J. Hugo Reed, of Guelph, Ont., Can., died Jan. 14, 1925, following an operation for peritonitis from which he failed to recover.

Born in Georgetown, Ont., 72 years ago, Dr. Reed was graduated from the Ontario Veterinary College in 1883 and immediately located at Guelph for the practice of his profession. Ten years later he was appointed lecturer in veterinary science at the Ontario Agricultural College, at Guelph, which position he occupied until two years ago, when he retired. He is survived by his widow, two sisters and one brother, Dr. H. G. Reed, of Georgetown, Ont.

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R. A. McI.

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**MRS. H. M. GRIFFIN**

Mrs. H. M. Griffin died at her home, Morning Sun, Iowa, January 2, 1925. She was the wife of Dr. H. M. Griffin and the sister of Dr. B. E. Grover, of West Branch, Iowa. Our deep and heartfelt sympathy is extended to both these members of the profession and their families.

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**W. H. BULLOCK**

Dr. W. H. Bullock died August 27, 1918, at the Woodman (Colo.) Sanitorium. Postmortem examination revealed the cause of death as carcinomatosis of the lungs.

Dr. Bullock was a graduate of the Kansas City Veterinary College, class of 1917. Prior to graduation he had been lay inspector in the U. S. Bureau of Animal Industry, at Kansas City. Following graduation he was connected with the Simonsen Serum Company, at Hooper, Nebr.

(Record of this death is made at this time for the reason that it has not been previously recorded in the JOURNAL.—*Ed.*)

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**CHARLES H. MEYERS**

The death of Dr. Charles H. Meyers, of Middletown, Conn., a former member of the A. V. M. A., has just been brought to our attention. Dr. Meyers died March 4, 1920, but his death has not been previously recorded in the JOURNAL. He was a graduate of the American Veterinary College, class of 1898.

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**WILLIAM T. CONWAY**

Dr. Wm. T. Conway, of St. Louis, Mo., died at his home in that city, January 1, 1925.

Born at Boston, Mass., March 10, 1877, the deceased received his education in the grammar and high schools of Boston. His veterinary training was received in the Veterinary Department of Harvard University, from which he was graduated with the class of 1901.

Dr. Conway entered the service of the B. A. I. as assistant veterinary inspector, in 1903. He was stationed successively at National Stock Yards, Ill., St. Louis, Mo., Morristown, Tenn.,

New Haven, Conn., Pittsburgh, Pa., and St. Louis, Mo. He was inspector in charge at the four stations last named. Through his ability and strict attention to duty he had won the confidence of his superiors and at the same time enjoyed the respect of all the men under him.

Dr. Conway joined the A. V. M. A. in 1918.

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### MATTHEW HARRISON McKILLIP

Dr. M. H. McKillip, of Chicago, Ill., died December 20, 1924.

A biographical sketch of Dr. McKillip will appear in the next issue of the JOURNAL.

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### MARRIAGES

Dr. Emil Krenek (K. C. V. C. '16), of La Grange, Texas, to Miss Marguerite Mellette, of San Francisco, Calif., December 13, 1924, at Houston, Texas.

Dr. Geo. W. Rawson (U. S. C. V. S. '16), of Detroit, Mich., to Miss Wilhelmina Kemno, of Washington, D. C., January 17, 1925, at Detroit, Mich.

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### BIRTHS

Dr. and Mrs. F. O. Lundberg, of Wausa, Nebr., a daughter, Virginia Mae, Dec. 12 1924.

Dr. and Mrs. C. R. Fry, of Centerville, Iowa, a son, Norman Phelps, Dec. 25, 1924.

Dr. and Mrs. S. W. Haigler, of St. Louis, Mo., a daughter, Judith Louise, Jan. 9, 1925.

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### PERSONALS

Dr. F. E. Broad has located at Plymouth, Ind.

Dr. H. J. Harrington has located at Potomac, Ill.

Dr. Morton Tanner has located for practice at Milroy, Ind.

Dr. M. H. Mires (Corn. '24) is practicing at Sherbourne, N. Y.

Dr. C. Latimer (Ont. '24) has selected Boissevain, Man., as a location.

Dr. H. D. O'Brien (K. S. A. C. '11) is again in practice at Danville, Ill.

Dr. D. D. Robertson (Iowa '24) has removed from Lodi, Wis., to Laurel, Iowa.

Dr. H. L. Cox (Corn. '24) is located with Drs. Miller and Zepp, in New York City.

Dr. J. B. Reidy (Corn. '02), of Augusta, Me., spent his Christmas vacation in Ithaca, N. Y.

Dr. D. N. English (Ont. '24) has located at Souris, Man., for the practice of his profession.

Dr. H. M. O'Rear (Ind. '12) gives his new address as 116 East 25th Street, Indianapolis, Ind.

Dr. Chas. H. Rosenstiel (Chi. '08), formerly of Freeport, Ill., is now located at Mt. Carroll, Ill.

Dr. C. L. Kern (Corn. '24), of Atlanta, Ga., visited Ithaca, N. Y., during the Christmas holidays.

Dr. Clayton E. DeCamp (Corn. '23) is with the Norwich Pharmacal Company, at Norwich, N. Y.

Dr. R. E. Whiting (Corn. '24) has accepted a position with the Women's League, in New York City.

Dr. J. B. Cheney (Corn. '24) is in practice with his brother, Dr. David Cheney, at Potsdam, N. Y.

Dr. C. C. Logan (Iowa '12), formerly of Keosauqua and Burlington, has located at Mt. Pleasant, Iowa.

Dr. W. R. Crawford (Corn. '24) has accepted a position at the University of Maryland, College Park, Md.

Dr. A. A. Wilhelm, formerly at Ottawa, has located at Sandusky, Ohio. Address: 709 W. Washington St.

Dr. L. W. Kellogg (Chi. '17), formerly of Hull, Iowa, gives a new address: 3921 Farnam Street, Omaha, Nebr.

Dr. W. N. Berg (Geo. Wash. '16), formerly of Brooklyn, is now at 1154 Sheridan Avenue, New York, N. Y.

Dr. Clinton Ellis (K. C. V. C. '18), formerly located at Jefferson City, Mo., now receives his mail at Dover, Mo.

Dr. C. Mackie (Ont. '16), of Carman, Man., recently spent three weeks on a holiday visit in Miami, Florida.

Dr. C. W. Fritz (U. S. C. V. S.) recently assumed the duties of Food and Dairy Inspector of Kingsport, Tenn.

Dr. Arnold Stobart (Ont. '21), of Winnipeg, Man., spent a vacation of three weeks at Victoria, B. C., recently.

Dr. Frederick A. Grenfell (Geo. Wash. '14), formerly of Washington, D. C., is now at Pearl River, N. Y., P. O. Box 586.

Dr. C. E. Swaile (O. V. C. '16), of Colebrook, N. H., was recently elected County Commissioner of the county of Coos.

Dr. W. O. Longfellow (Ont. '07), of Fostoria, Ohio, has been appointed Municipal Meat Inspector by the Board of Health.

Dr. W. E. Macklin, Jr., (Iowa '13), of Coon Rapids, Iowa, has removed to Minneapolis, Minn., and is located at 1612-23rd Ave. N. E.

Dr. W. E. Frink (Corn. '07), of Los Angeles, Cal., has just completed a modern small animal hospital and reports a growing practice.

Dr. Roy Houser, of Bourbon, Ind., recently sustained a painful cut on one jaw while splitting wood. The wound required several stitches.

Dr. B. L. Strohl has been chosen County Veterinarian for Edgar County for another year, at a salary of \$3600. His headquarters will be at Paris, Ill.

Dr. R. O. Mudd, of Bushnell, Ill., has accepted the position of County Veterinarian of Fulton County, Ill., and will be stationed at Lewistown, Ill.

Dr. L. B. Wood (Chi. '10), formerly at Winchester, Ill., has removed to Carrollton, Ill., where he is filling the position of Greene County Veterinarian.

Dr. H. Bradshaw (Ont. '89), of Portage la Prairie, Man., has returned from an extended trip covering a period of six months, to Great Britain and Ireland.

Dr. R. E. Houghton, formerly at the East St. Louis Stock Yards, has been appointed County Veterinarian by the Board of Supervisors of Sangamon County, Ill.

Dr. W. A. Haynes (Chi. '03), of Jackson, Mich., recently took the Pasteur treatment, following a bite from a rabid dog. The owner also was bitten and had to take the treatment.

Dr. H. W. Wilson (Chi. '15), of Helena, Ark., recently met with an accident that resulted in his losing part of the middle finger of his left hand. The "stump" was doing nicely at last reports.

Dr. J. B. Still (Ont. '07—McK. '08) and Dr. N. D. Christie (Ont. '10), of Winnipeg, Man., attended the Western Canada Live Stock Union, held in Calgary, during the month of November.

Dr. Wayne Alter, of St. Paul, Ind., recently lost nine valuable St. Bernard dogs, the mother and eight pups, in a fire that destroyed his kennel that had been completed just a few days before the fire.

Dr. R. R. Cusack (Chi. '17), of Wimbledon, N. D., has removed to Carrington, N. D., and taken over the practice of his brother, Dr. F. L. Cusack (Chi. '92), who has been elected Sheriff of Foster County.

Among those who attended the annual meeting of the American Association for the Advancement of Science, in Washington, D. C., December 29-31, 1924, were the following veterinarians: Drs. F. M. Hayes, R. A. Kelser, A. Eichhorn, Ward Giltner and C. I. Corbin.

Dr. W. A. Hagan (K. S. A. C. '16), of the N. Y. State Vet. Coll., read a paper entitled, "Green Coloration Produced by Certain Streptococci on Blood-Agar Plates," before the Society of American Bacteriologists, in Washington, D. C., Dec. 29-31, 1924.

Dr. Wm. E. LeCroy, of Fairfield, Ill., has been appointed County Veterinarian by the Board of Supervisors, of Henderson County, Ill. Dr. LeCroy will devote his time exclusively to the work of tuberculosis eradication, and will make his headquarters at Stronghurst, Ill.

Dr. H. S. Wooters (Chi. '13) and Dr. F. J. Pilon (Chi. '12), of Champaign, Ill., have bought out Dr. J. H. Harvey, and are conducting a veterinary hospital at 502 N. Hickory Street, Champaign. They are doing a mixed practice and conducting a Jen-Sal shipping depot.

Dr. J. M. Atterberry (Chi. '13), of Albion, Ill., recently had his Ford coupe stolen while attending a meeting at the Fair Grounds. The car was recovered the following morning at Eldorado, Ill., but about \$50.00 worth of instruments and supplies were missing from the car.

